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The report of the demise of the freight car clearing house and pooling experiment appears to be "greatly exaggerated." The Alton has decided to withdraw and the St. Paul has not been a supporter for some time, but the other roads do not seem to have yet lost courage. Nevertheless it was not reasonably to be expected that even the most limited car pool would succeed at the first attempt, or the second. Such an arrangement has all the disadvantages of a gentleman's agreement on the one hand and of an unwieldly machine on the other. A Mallett compound locomotive with 40-ft. boiler tubes and eight groups of drivers would be simpler. The mere expense of keeping the necessary records, with or without the attempt at an actual or modified pool, staggers the railroad officer who is not farsighted and bold. Freight car records have always been trouble breeders. No car accounting scheme ever supplanted another by a strong vote; it has always been carried by arguments which on slight provocation would reverse themselves. Some roads are now declaring that any equalization of cars as between different roads must be given up because under the present Federal law it becomes illegal. This argument is useful as talk, but, we believe, as talk only. The Interstate Commerce Commission has taken uniformly sensible views on economical use of freight cars and can be depended on to block any arbitrary or narrow construction of the law. The silver lining to this car pool cloud is the fact that nothing can hinder any road from hunting up its own cars, nor from taking proper measures against those who misuse them. A pool might be five years in getting successfully under way, but in five months with a sufficient force of tracing agents a single road could make a long stride toward reform, provided it were not itself too big a sinner.

Mr. Wilgus' resignation from the New York Central has something more than personal interest to those who have watched the development of railroad officers to meet the peculiar demands of exacting modern conditions. The day of the grand old man of keen, observant eye and a memory for the face and name and personal quality of every division officer and of most foremen is long past. Time was when the science of railroading was crude, when the appliances and uses of power were few, when the loads were light and the speeds were low, and when memory, rules of the thumb and stern but parental watchfulness of subordinates were the only requirements for the man who ran the road. We need those men now to maintain discipline, but with the use of electricity, compressed air and oil, as well as steam; with many safety appliances making speed, weight, shorter space intervals and luxurious comfort possible and necessary; with decreasing rates and increasing costs; with trade union, socialistic and governmental domination; with these, the satisfactory officer at the head of a department of a great railroad must be an earnest student and must become a scholar with full knowledge of the sciences involved in his administration, and, of equal importance, of character and with a judgment of men. Mr. Wilgus is simply one of this modern type and it happens that his field of usefulness has been that of designing engineer. But the requirements of this age must develop the same type of scholarly, devoted men in the operating, traffic and financial departments. The "scholarly" officer need never to have seen the walls of a university, but he must have an insatiable appetite for facts which pertain to his work, and keep busy in digesting them. A man cannot operate successfully a machine which he does not thoroughly understand, and it is becoming more and more plain that the ideal officer in charge of operating, contracting for transportation, or financing a great modern railroad must be capable of a thorough understanding of its locomotive and electric power, its signals, track and structures, their uses and limitations; and this with an ability to train and judge subordinates. A livery stable or a stage route has in its management some of the problems of a great railroad with electric terminals, but these problems vary in size and difficulty.

W. F. M. Goss has resigned as Dean of the Engineering Schools of Purdue University to become Dean of the College of Engineering of the University of Illinois. His name has long been identified with Purdue University, but his fame comes rather from his services to railroad science and his help to motive power officers. His going will be a loss to Purdue and a gain to the University of Illinois, but his wide field of influence among railroad officers will not be narrowed. He will have equal opportunities in his new position to continue the work by which he has become so well known in the past. Railroad officers, particularly those of the motive power department, all over the world are familiar with his work in investigating the problems of the locomotive. It was he who conceived

the idea of a stationary locomotive testing plant and who, after a number of years of patient waiting and planning, saw the first plant wiped out by fire almost before any experiments with it had been made. He was not discouraged and soon had another and better experimental plant with a large modern locomotive ready for testing. The results of his investigations during the last ten years have made great changes in locomotive design. Perhaps more than to any other man he may be given the credit for inspiring the monumental work of the Pennsylvania Railroad in building its own elaborate locomotive testing plant for the St. Louis exposition, work in which is now continued in a permanent and progressive way at Altoona. The experimental work at Purdue under Prof. Goss has not been confined entirely to the locomotive, however. Largely through his efforts the Master Car Builders' Association built and installed there its brake-shoe testing machine, its drop testing machine for couplers and axles and its air-brake test rack. His boys, his old students, will all feel a sense of personal loss when he leaves the post where he was so long their friend and counselor.

ELEMENTARY ESSENTIALS IN RAILS.

The railroads are not asking for the impossible when they demand rails that are tough and strong and hard enough to stand a reasonable amount of wear under heavy wheel loads. They want rails made of sound homogeneous steel free from segregation and pipes, toughened and hardened by proper physical and heat treatment during rolling and not by simply increasing the hardening elements, carbon and phosphorus and then passing the metal at too high a heat through the rolls. High carbon and phosphorus make hard rails—which break because they are brittle—and the method costs nothing. Because this gets wearing qualities under present methods of rolling, these hardening elements have been gradually increased to beyond the danger point. It takes more time to roll rails thoroughly at a low temperature and reduces the output a little.

The lower the temperature to which steel is worked the finer the structure and the greater the hardness and toughness. If the work stops at a high temperature the steel in cooling assumes a coarse crystalline structure, and becomes brittle. On the other hand, if the rolling or forging is continued until the steel cools down to the so-called "critical temperature," about 1,600 deg. Fahr., the fine, strong texture produced by the physical work is retained on further cooling, and a hard, tough steel is produced. With rapid and continuous rolling the finishing temperature is therefore a good indication of the amount and efficiency of the work done on the rails. Kept low enough it insures that the steel has been thoroughly worked under the best conditions, and that in cooling it will not deteriorate. It is not practical to work too close to the critical temperature, but it is easily possible to finish rails at much lower temperatures than at present employed.

The method of checking the finishing temperature almost universally used is to measure the shrinkage in a rail length from the time it leaves the last pass until it cools completely. It is an accurate thermometer. The committee of the American Society for Testing Materials recommends "a shrinkage allowance at the hot saws for a 30-ft. rail of 100-lbs. section, of $6^{11}/_{16}$ in., and $^{1}/_{16}$ in. less for each 5-lb. decrease of section. These allowances to be decreased at the rate of .01 in. for each second of time elapsed between the rails leaving the finishing rolls and being sawn." This is a more liberal allowance than was made a few years ago, when we got good rails, and it does not unduly limit the mill's tonnage. The limit to be placed on the shrinkage allowance is a matter to be agreed on, but it should be much lower than it now is in any specifications in force.

While the chemical requirements are important they need not be defined too closely or insisted upon too strongly. Given the proper heat treatment and sufficient work in the rolls the rails will be hard enough, even though the chemical composition of the steel varies widely. The greatest danger from bad chemical composition is in making brittle rails due to too much phosphorus and carbon. To guard against brittle rails the drop test, if properly conducted, is a sufficient check. It is not enough, however, to make a drop test from every third heat or every fifth heat of steel. There are inevitable variations in the action of the Bessemer converter, and these variations may be sudden and extreme. One heat may make good rails, and the next heat bad rails. Nor should there be any provision for retest of heats which fall under the drop. If the test rail fails it is reasonable to suppose that other rails in the same heat may be weak and dangerous to put in track. Dr. C. B. Dudley, in a recent address, said:

"If a shipment made under specifications has been tested and does not fill the requirements, all of the material covered by the test should be rejected. None of the specifications of the Pennsylvania Railroad provide for a second or third sampling in corresponding tests. Our theory is that the material ought all to be of the grade called for by the specifications. One sample then is as good as 50. If a specification is so severe that only two-thirds of well-made material will stand test, the specification should be changed. On the other hand, if a manufacturer can only make a product, two-thirds of which will stand test, he should either learn how to improve his product, or go out of business."

Rail specifications then to meet present needs resolves itself into firm insistence on three points; sufficient discard from the top of the ingot to give sound homogeneous steel, limiting the shrinkage to insure low finishing temperature and adequate physical work during rolling and a drop test made frequently enough and severe enough to detect brittle rails. These features of the specification the railroads have a right to determine for themselves, always, of course, within reasonable limits; but it is a fact that rails furnished to American railroads during the past four years have not been made to specification—this with possibly a few exceptions. Orders with specifications as to quality have been refused during these flush times. Quality has deteriorated, sacrificed to increased output and increased profits. The conditions are changing. Orders are now solicited, but orders are held back in the hope that the publicity given to bad manufacturing may result in a decent regard for the rights of the railroads and the people who use the railroads.

MEXICAN GOVERNMENT RAILROAD HIGH FINANCE.

The principal railroads of Mexico are shortly to be consolidated in one great system under control of the national government. Complete plans of the merger have not yet been made public, but certain facts have lately been reported from the city of Mexico. The National Railways of Mexico, the new company, is to include, with the exception of the Tehuantepec National and the Vera Cruz & Pacific, the various railroads in which the government has a controlling interest, amounting in all to nearly 7,000 miles of line. The new company is to be capitalized at $230,000,000 in stock, of which $30,000,000 is first preferred, $125,000,000 second preferred and $75,000,000 common stock. Bonds are to be limited to a maximum of $417,000,000, of which $231,000,000 are to be preferred mortgage 4½ per cent. bonds, and the remaining $186,000,000, 4 per cent. general (second) mortgage bonds, the latter guaranteed principal and interest by the Mexican government. This makes a total capitalization (stock and bonds) of $647,000,000.

The railroad development of Mexico has been different from that of the United States, in that it has been by north and south rather than by east and west lines. To be sure the first railroad in Mexico, the old Mexican Railway—the most important, by the way, of the lines still independent of government control—was built to carry an existing traffic between Vera Cruz, the principal seaport, on the east coast, and Mexico City, the capital. But even to this day, owing to the difficulties of crossing the Sierra Madre range which runs parallel to and not far from the west coast, with the exception of the Tehuantepec National, which crosses the narrow isthmus at the southern extremity of the republic, there is no east and west line in operation across the country from coast to coast. The two most important railroads, the Mexican Central and the National of Mexico, connect points on the United States boundary with the capital city. These roads were so built because the principal mountain ranges of Mexico run north and south, and because the promoters of these roads were men from the United States who looked to the interchange of traffic between the two countries as the principal source of future profit.

Up to 1880, the Mexican government made no effort to encourage railroad building. Up to nearly that time the uncertainties of Mexican politics made railroad construction especially difficult and expensive through the exactions of the party which happened to be in power. The cost of the Mexican Railway, the only road built previous to 1880, was estimated by A. M. Wellington to have been doub'ed by such means. In 1887, Porfirio Diaz, then 47 years old, was first elected President of the republic. Ever since that time he has been in power, directly or indirectly. He brought order out of disorder because of his success in developing the material welfare of the country. In particular he realized the efficacy of railroads in uniting the political and upbuilding the commercial interests of the nation. In 1880, three years after his election, a law was passed which, while expressly reserving the right of gov-

ernment regulation, provided for government subsidies and other favors to new railroads. Most of the railroads of Mexico were built under this law. It was superseded in 1899 by a new law which amplified the old one and also made possible more efficient methods of railroad operation, in particular, by legalizing pooling arrangements and prohibiting construction of unnecessary parallel lines. It also provided that all railroads built under succeeding concessions should revert to the government at the end of 99 years. This law therefore marked a strengthening of the railroad policy of the government.

In 1903 it was rumored that interests allied with the Standard Oil group of capitalists in this country, who already had a large interest in the Mexican Central, were about to acquire the National and consolidate the two roads. The government thereupon bought control of the National of Mexico, thus preventing the threatened merger. It also secured the Mexican International and the Interoceanic of Mexico, two small but important roads. These three roads were more or less formally combined under the title National Lines of Mexico. Although the government held virtual control, it did not undertake the actual management, which was left largely in charge of the other owners. In other words, this was not government operation or strictly even government ownership, but simply government control by stock ownership.

Last December it was announced that the government had bought securities of the Mexican Central sufficient for control, and was planning to consolidate that road with the National Lines. The three main arguments for this consolidation were summed up as follows by Minister of Finance Limantour to the Mexican Congress: First, to avoid friction between competing lines; second, to prevent absorption of the Mexican Central by one of the great railroad systems of the United States, and, third, because of the prospect of realizing economies through consolidation.

The first reason is shown by the accompanying remarks of the Minister to refer particularly to the inequalities of a situation in which it is to the interest of the national government to favor one of two competing roads at the expense of the other. A concrete instance is the concession granted to the National Lines soon after their acquisition by the government, allowing them and them only to build new railroads across a stretch of territory about 30 miles wide on the south bank of the Rio Grande, thus preventing the Mexican Central from building a projected cut-off to give it a shorter route for international traffic than its present roundabout route via El Paso. It does not seem as if this could have been an important reason from the government's point of view because the hardship falls, not on the government's own road, but on its competitor. But there is another possible reason for this desire to avoid competition. The Mexican Central is heavily over-capitalized. It has about $100,000,000 in mortgage bonds and collateral trust notes falling due within four years. It is by no means certain that the road, left independent, could have come through this trying financial period without a receivership. Hence with the Mexican Central independent there was the possibility of the government system's having to face the ruinous competition of a bankrupt road.

The second reason is probably the one which was most important in bringing about the acquisition of the Mexican Central. The strong federal government of Mexico has for some time looked with alarm at the prospect of having its principal railroads controlled in the United States. Yet to prevent the reported absorption of the Central by a United States system, the government has undertaken the very consolidation which three years earlier it entered upon its large policy of railroad ownership to prevent, and has brought to an end the useful competition in railroad rates and service which it then attempted to preserve.

The third reason, the economies of consolidated management, though actually important, probably was incidental. There is no doubt, however, that there are many economies to be gained, particularly in centralization of management and more economical routing of through traffic.

Not only has the Mexican government in making this consolidation adopted the very principle which it was unwilling to see established under private ownership in Mexico, and at which it looked askance as carried out in the United States, namely, consolidation of parallel and competing lines, but in the formation of the merger it has followed still other methods evolved by American railroad financiers. As already mentioned, the stock capitalization of the new company is $230,000,000. Considering the consolidated system to have 7,000 miles of line—in reality it has a little less than that—this is at the rate of $32,857 stock per mile. The total bond issue of $417,000,000 similarly works out at $59,571 bonds per mile. This is a total of $92,428 per mile, assuming that all of the bonds are to be issued at once or held to refund outstanding issues. The present capitalization of the Mexican Central, National of Mexico, Mexican International and Interoceanic of Mexico together is about $21,250 stock and $33,000 bonds per mile.

Even though the new bonded debt per mile be no heavier than at present, the new company would have a total capital (stock and bonds) of $65,885 per mile. The average stock and bond capitalization of all United States railroads is $66,583. But, in Mexico, of the less than 7,000 miles of line included in the merger, 1,315 miles are narrow gage, and, furthermore, maintenance expenditures on standard and narrow gage alike have been much lower than the average on United States roads, with the resultant fact that the Mexican roads are reported to be in great need of repairs and improvements. The figures for the United States, on the other hand, cover, with unimportant exceptions, standard gage railroads, many of them with large amounts of second, third and in some cases fourth track, and with exceedingly valuable terminals. More than this, the typical United States railroad has of late years, instead of holding back on maintenance expenditures, been appropriating large sums out of earnings for betterments and improvements. It is obvious therefore that even the probable minimum capitalization of the National Railways of Mexico is very high, in comparison with the present value of the roads. It is to be observed further that the maximum proposed bond issue of the consolidated company is 80 per cent. larger per mile than the existing bond issues of the separate companies. A part of the bonds, however, are no doubt to be reserved for betterments and additions to existing lines and acquisition of other roads which may sooner or later come under control of the government. The explanation given by the Minister of the $230,000,000 of stock capitalization is that the issue is large in order to give the government control of a majority of the shares, their value being a matter of secondary consideration; in other words, that part of the stock is issued for purposes of control only.

The National Railways of Mexico in short is a splendid example of the modern highly capitalized holding company. It has all the elements of that institution as developed during the last few years in the United States. A number of properties, most of them already capitalized at an amount far exceeding their actual value, are merged in a central company which issues its securities in exchange, in amounts not only large enough to repeat the overcapitalization of the constituent units and to cover the economies of consolidation, but to provide for all the growth which can at best be expected for many years in the future. The operation appears to be on a par with the Chicago & Alton reorganization and the formation of the Rock Island Company. The striking and original thing about it is that it is being carried out by the government of the country in which the consolidated properties are situated; this at the very time that the United States government is considering the advisability of trying to break up similar mergers. It is only natural to wonder whether the evil effects of such "high finance" methods, as recognized in the United States, will appear when such a consolidation is carried out by a government. What effect, for instance, will the existence of $200,000,000 second preferred and common stock, part of which will be in the hands of the public, have on railroad rates in Mexico? When it is argued by American railroad officers that capitalization has no effect on rates, the existence of competition is always given as proof of the assertion. But in Mexico there will be no competition to overrule the natural incentive to pay dividends on all outstanding stock. This is only one of the interesting questions for the future brought up by the recent railroad policy of the Mexican government.

NEW PUBLICATIONS.

American Street Railway Investments: Issued in connection with the Street Railway Journal; 1907 edition; 462 pages; 9½x12¾ in.; cloth; price, $5.00. The McGraw Publishing Co., 114 Liberty Street, New York.

The current volume contains the usual full statistical data about street railways in the United States, giving a brief statement of the history, capitalization, earnings, expenses and traffic statistics of each company together with a statement of plant and equipment, a list of officers and a date for the information about each company. The book is illustrated this year with 44 maps and covers the reports of more than 1,400 operating and controlled companies in the United States and Canada. In the beginning of the book, compilations are made as in previous years of companies arranged in groups according to their gross earnings, and it is interesting to note that in the 1906 fiscal year there were 63 companies which earned over $1,000,000 each, as against 53 companies in 1905. The

five companies having the largest earnings in 1906, as in 1905, were the Interborough Rapid Transit Company of New York, which earned $20,411,097; the New York City Railway Company, which earned $19,092,385; the Brooklyn Rapid Transit Company, $18,797,264; the Philadelphia Rapid Transit Company, $17,676,249, and the Boston Elevated, $13,634,612. There were also two other companies which earned more than $10,000,000 in 1906, the Pittsburg Railways Company and the Chicago Union Traction Company. In all, there were 15 companies which earned more than $5,000,000 in 1906, as against 14 in 1905. There were 20 companies which earned over $4,000,000, as against 16 in 1905, and 29 companies which earned over $3,000,000, as against 22 in 1905. There were 44 companies which earned between $500,000 and $1,000,000, 184 companies which earned more than $100,000 and less than $500,000, and 190 companies which earned less than $100,000.. The most interesting part of the showing is that decreases were practically nonexistent, while each of the groups showed a very substantial gain over 1905; thus the gain of the companies in group one, having gross receipts of over $1,000,000, was 16 per cent. in 1906 over 1905; the gain in group two, having gross receipts between $500,000 and $1,000,000, was over 31 per cent.; that of the third group, having receipts between $100,000 and $500,000, was over 24 per cent., and the gain of the group having gross receipts between $50,000 and $100,000 was 29 per cent. This is probably the best argument that could possibly be given for the stability of American street railway enterprises.

CONTRIBUTIONS

A Radical Change in Rail Design.

68 William St., New York, July 10, 1907.

TO THE EDITOR OF THE RAILROAD GAZETTE:

It seems to us that the present is the time for a radical change in design of rails. It must be evident to any engineer that the design of a section for use on a railroad with heavy rolling stock and good roadbed calls for a different distribution of material from that required by a new road with much lighter cars and locomotives and poorer permanent way.

Railroad engineers have heretofore been limited in their designs by the ability or unwillingness of the rolling mills to produce other than standard sections. The introduction of very broad flanged beams as rolled on the Grey Universal Mill has opened up new possibilities, and we would suggest that railroad engineers should design new rail sections, which in their judgment are most suitable for the different divisions of their roads, and in so designing cut loose from all preconceived ideas as to what, in their minds, it is possible for the rolling mills to produce and simply show what would be ideal for their conditions. There is no necessity to retain any of the old characteristics, height (area of head, web and flange), and widths need not be restricted to measurements approximating those heretofore in use; all that need be considered is what is most desirable for their own individual purposes. The effort to standardize various weights of rails and induce railroads to use such, regardless of their climatic and other conditions, has brought about unsatisfactory results. The railroad man defers to the rail-maker, instead of the latter endeavoring to meet the views of the former. The railroad engineer should design his section and the rolling mill should roll, as near to his requirements as their outfit will allow. It should not be that the rail-maker tells the railroad what it will give and the railroad engineer has to accept. This has been the condition and the results have been disastrous. The situation needs a thorough overhauling, and it is up to the railroad engineer to show what he would like to have without regard to what he has had to use. If he wants higher rails and wider flanges, this need not mean heavier rails. If the railroad first determines what is ideal, it is then up to the rail-maker to see how near he can come to producing such ideal. We are convinced that better service can be obtained by changing the method of rolling rails. We are also of the opinion that the time is ripe for changing the whole plan of railroad permanent way. The wooden tie is a costly relic of bygone days, and a relic which costs untold millions to perpetuate. The rail as now designed has two separate and distinct functions calling for two diametrically opposing qualities, one to resist the positive bending moments, resulting from the wheel loads, and the other to resist the abrasion and crushing effect of heavy and repeated wheel pressures. The first requirement might be satisfied by a permanent section of structure which would support for its entire length the frictional resisting section, which must be so carried as to allow its being quickly replaced when worn sufficiently to call for removal. By having one section for the load-bearing medium and another for the frictional resisting medium two separate qualities of steel can be used, and each can be so graded as to meet the requirements for which it is designed.

Railroads are in a rut and no one seems disposed to get out of it. Why should they continue to demand from the rail-maker what he cannot make, or rather, what he has so far failed to satisfactorily supply—namely, a single bar of steel which has at the same time the maximum wearing qualities and the highest efficiency of load-bearing characteristics? If they have one bar suited for one function and another for the other function and each designed both as to shape and quality to best serve its individual purpose, they will get better service, cheaper renewals and greater safety. The time is ripe for getting out of the rut and for dispensing with both the wooden tie and the old T-rail, the former necessitating almost continuous renewals and the latter necessitating the renewal of not only the part that is worn out by reason of oft-repeated heavy wheel contact pressure, but also that part which is designed to transmit such wheel loads to the roadbed.

HENRY GREY & SON,
Consulting Engineers.

The Block-Signal and Train-Control Board.

This is the title of the board which has been appointed by the Interstate Commerce Commission under the acts passed by the last two sessions of Congress, to investigate and report on the subject of automatic stops and other questions connected with block signaling. The members of the board are: Professor Mortimer E. Cooley, Dean of the Department of Engineering, University of Michigan, chairman; Azel Ames, Jr., Signal Engineer, Electric Zone of the New York Central; Frank G. Ewald, Consulting Engineer of the Illinois State Railroad Commission, and B. B. Adams, Associate Editor of the *Railroad Gazette*.

The immediate purpose in establishing this board appears to have been to give suitable publicity to the present "state of the art" of automatic apparatus for stopping trains, as called for in the communication which was sent to Congress by the Interstate Commerce Commission on January 3 last, wherein the commission advised Congress that it was credibly informed that such devices had been sufficiently perfected to justify the government in testing them. The clause in the appropriation bill which authorizes the commission to expend money in this direction was, however, drawn so as to cover not only the investigating and testing of automatic stops, but also investigation in regard to the use of and necessity for block signals on railroads. The functions of the new board will, therefore, include the examination of any or all of the subjects which were dealt with in the report on the block system which was made to Congress by the commission last February (*Railroad Gazette*, Vol. 42, pages 277, 479, 507 and 544). That report, it will be remembered, spoke of the need of further investigation of signaling under the following four heads:

(1) The telegraph block system on the larger roads (mainly double track) as regards the personnel and the routine, the use or non-use of distant signals, and the practice of permissive block signaling.

(2) The telegraph block system on single track lines and minor roads as regards the personnel, the routine, distant signals and permissive signaling, and also as regards the use of time rules and despatchers' orders to make up for incompleteness in the block signaling arrangements.

(3) The automatic block system should be investigated on all roads with respect to the efficiency of the apparatus and of the methods of inspection and care and the integrity of the records of signal operations in respect to their completeness.

(4) The automatic block system on single track lines should be investigated with respect to the features named in the foregoing paragraph, and also as regards the use simultaneously with the block signals of despatchers' orders and other measures designed to prevent collisions irrespective of the block signal system.

Prof. Cooley, who is appointed chairman of the board, was graduated from the United States Naval Academy in 1878, but resigned from the service in 1885, since which time he has held the chair of Mechanical Engineer in the Universty of Michigan. Prof. Cooley made a valuation of the physical property of the railroads of Michigan ordered by the legislature in connection with taxation a few years ago, and has done other similar work for that state. Last year he was employed by the city of Chicago in connection with the valuation of the street railroads of that city, and he was one of the authors of the valuable report on that subject which was noticed in the *Railroad Gazette* of December 28, 1906, page 567.

Captain Ames is a graduate of the Massachusetts Institute of Technology and was an officer in the engineering corps of the United States army during the Spanish-American war. He was Supervisor of Track on the Hudson division of the New York Central, then Signal Engineer of the Boston & Albany, and subsequently of the Lake Shore & Michigan Southern before being promoted to his present place.

Frank G. Ewald has been Consulting Engineer of the Illinois Railroad and Warehouse Commission for the past ten years, prior to which he was employed by the city of Chicago in charge of tunnel work for the water system of that city. Before that he was employed in the engineering department of the Atchison, Topeka & Santa Fe.

B. B. Adams has for 20 years been one of the editors of the *Railroad Gazette*. He has had long experience in railroad work and is the author of "The Block System." He was for two years Secre-

tary of the Railway Signal Association. He has had charge of the preparation of the accident bulletins of the Commission for the past five years, and, with Mr. C. C. Anthony, performed the technical work in connection with the block signal report which the Commission made to Congress last winter.

W. P. Borland, Secretary of the Board, is a railroad man of long experience who has been employed by the Commission for the past five years.

The headquarters of the board will be at the office of the commission in Washington, and its Secretary is Mr. W. P. Borland. The commission has requested the co-operation of the American Railway Association in the conduct of any tests which may be made, and the signal committee of the association, in response to this request, has appointed a sub-committee to take up the matter consisting of Messrs. F. C. Rice (C., B. & Q.); A. M. Schoyer (Pennsylvania Lines); W. G. Besler (C. of N. J.); A. T. Dice (P. & R.); E. C. Carter (C. & N.-W.), and D. C. Moon (L. S. & M. S.).

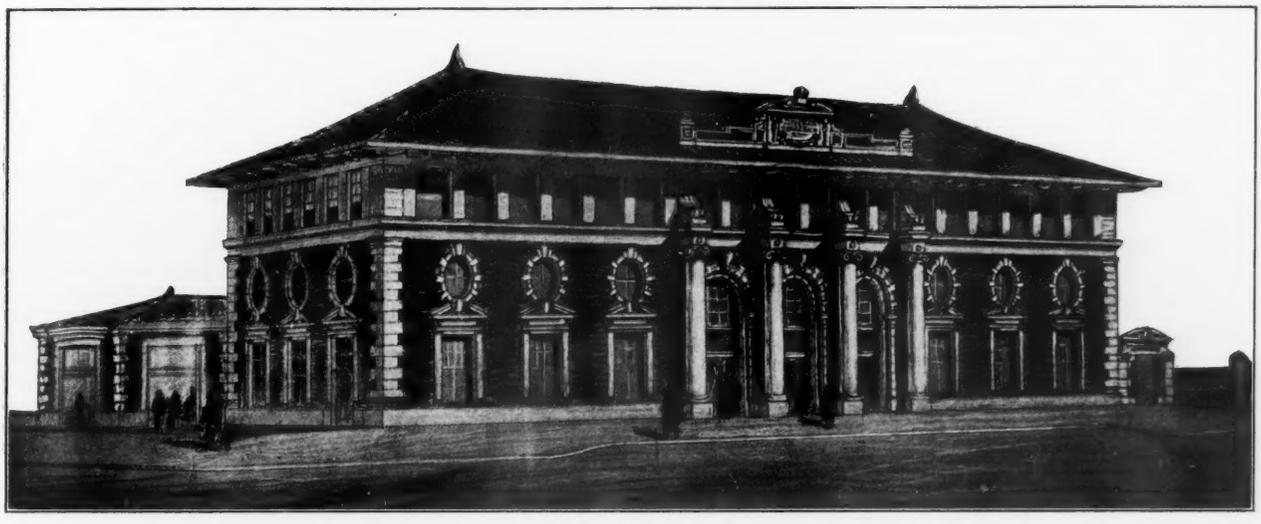
New Passenger Station at Evansville for the Evansville & Terre Haute.

The Evansville & Terre Haute Railroad has begun work on a new station at Evansville, Ind., on the site of the old one at the corner of Eighth and Main streets. In order to put the waiting room in the most convenient relation to the tracks, the station building will front on Eighth street and be built across the ends of the tracks. The long way of the building being parallel to Eighth street, the distance from the entrance of the building to any track is as short as could be secured. The building will be back some distance from the property line in order to give plenty of room for vehicles in Eighth street.

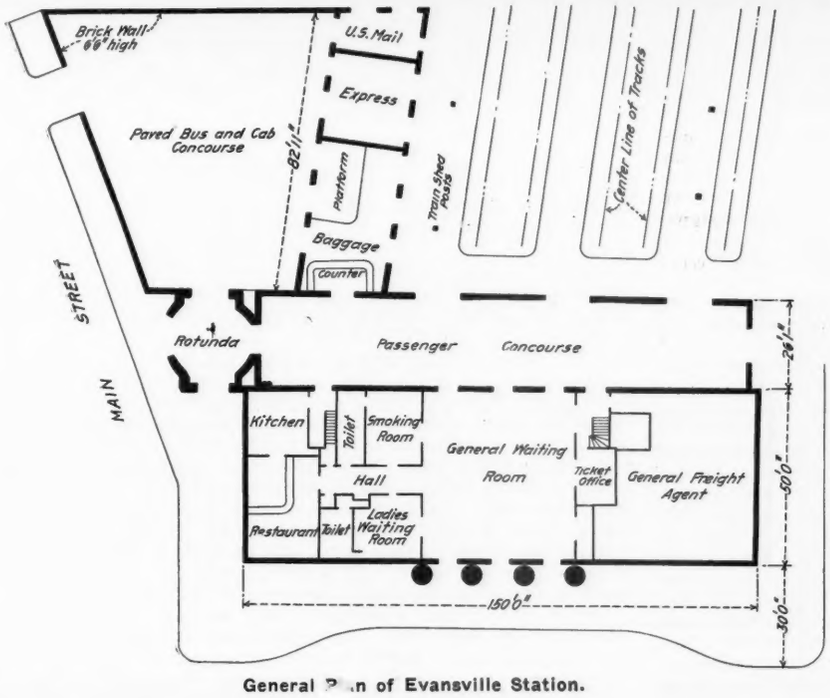
The main waiting room is at the center of the building, with the ticket office, telegraph office, smoking room and women's waiting room around it. The lunch room is at the west end of the building, at the corner of Main and Eighth streets, and opens off the waiting room. The sizes of these rooms are as follows: Waiting room, 55 ft. square; ticket office, 17 ft. x 11 ft.; smoking room, 19 ft. x 16 ft.; women's room, 19 ft. x 19 ft.; lunch room, 30 ft. x 20 ft.

Between the main building and the track fence there is a passenger concourse 25 ft. wide and 166 ft. long. The baggage room opens directly on this concourse on the track side, and the concourse has an exit porch on Main street. This latter gives direct communication between the concourse and the street so that passengers do not have to pass through the main building—a convenient and effective arrangement, especially when there are large crowds. The concourse entrance porch has a marquise, so that passengers arriving at or leaving the station by carriage or motor need not be exposed to the weather.

Express, mail and baggage are received and delivered by teams in a special courtyard on the Main street side, separated from the street by a brick wall. The baggage, mail and express, therefore, will be handled with the utmost convenience, out of sight of the public and in such a way as not to conflict in any way with the passenger service.



Proposed Station at Evansville, Ind., for the Evansville & Terre Haute.



General Plan of Evansville Station.

Besides the rooms on the first floor of the station already mentioned, there is a room at the east end, 40 ft. x 47 ft., for the general freight agent. The second and third floors, each with an area of 12,000 sq. ft., will be used for the general offices of the company.

The style of the exterior of the building is that of a freely interpreted classic on Colonial lines. There are round-headed windows below and an unbroken frieze formed by the windows of the third story, this frieze running around the whole building below the heavily overhanging roof. The main body of the wall surface will be red brick with stone trimmings. The frieze of the windows will match the stone in color and the roof will be of gray-green tile which contrast well with the red of the wall surface. In order to make the buildings most easy of access the front and back of the waiting room open out through three large doorways toward the street and toward the concourse respectively. This triple entrance on Eighth street is marked by monumental stone columns. In adopting the classic forms, the overhanging roof and the colorings mentioned, the idea was to produce a building which would be in sympathy with the architectural traditions of the South.

The auxiliary building for baggage, mail and express will be across the passenger concourse from the station building, 63 ft. long,

one-story high, and parallel to the tracks. The five tracks will be protected by a train shed, and beyond this there will be umbrella sheds for unusually long trains. To avoid smoke and dirt, the heating plant will be placed under the nearby freight house.

The architects for the station are D. H. Burnham & Co., Chicago. The principal contract was let to August Ohm, Terre Haute, Ind. It is expected to have the station ready for service in the fall.

The Interstate Commerce Commission's Report on the Harriman Investigation.

The report of the Interstate Commerce Commission on the investigation into combinations of carriers' generally known as the "Harriman inquiry" was made public on July 14. After summing up the expansion of the Harriman system and influence and reviewing the reorganization of the Chicago & Alton, which is said to be "rich in illustrations of various methods of indefensible financing," by a syndicate in which Mr. Harriman was one of the members, the Commission sums up as follows:

A.—The effect of the control of the Southern Pacific by the Union Pacific has been to unify and amalgamate the management of these two railroad companies and their steamship lines and to eliminate competition between them in transcontinental business and in business to and from Oriental ports.

B.—The Union Pacific, as has been shown, controls the San Pedro, Los Angeles & Salt Lake, the stock of which is deposited in the hands of a trustee. This line was originally intended as an independent road, extending from Salt Lake, where it connects with the Union Pacific and with the Denver & Rio Grande, to Los Angeles and San Pedro, Cal. There is therefore no competition between this line and the Union Pacific and Southern Pacific.

C.—It appears that the Union Pacific also owns $10,000,000 par value of the stock of the Atchison, Topeka & Santa Fe, and about $30,000,000 more is owned by individuals connected with the Union Pacific, making $40,000,000, or substantially 17 per cent. of the entire capital stock of the Santa Fe company. Who owns this stock outside of the $10,000,000 Mr. Harriman declined to state. Two directors of the Union Pacific are also directors of the Santa Fe company, and there is now a division of the Oriental traffic by the Pacific Mail Steamship Company between the Union Pacific and the Santa Fe systems. It appears that there has also been a division of the fruit traffic between certain California territory and the East, each taking a certain percentage, and that north of San Francisco the Union Pacific and the Santa Fe have joined and amalgamated their interests in the Northwestern Pacific Railroad and that a joint control has been inaugurated similar to that of the Chicago & Alton.

D.—Prior to the acquisition of the Southern Pacific by the Union Pacific the Denver & Rio Grande system, extending from Denver, where it connects with various lines to the east, to Salt Lake and Ogden, was given equal facilities over the Central Pacific, and thereby practically formed another transcontinental line. Since the amalgamation of the Union Pacific and Southern Pacific and the construction of the San Pedro road this line has been denied equal facilities in the receipt and transportation of freight over the Central Pacific and the San Pedro lines. Its business, therefore, has decreased, and its ability to compete with the Union Pacific and Southern Pacific impaired. On this account the Gould lines are aiding the construction of another line from Ogden to San Francisco.

E.—The joint control of the Chicago & Alton by the Union Pacific and the Chicago, Rock Island & Pacific has undoubtedly eliminated competition between the Alton and the Rock Island between Chicago, St. Louis and Kansas City.

F.—These are conspicuous illustrations of the development of the theory of "community of interest" and "harmony of management," which Mr. Harriman suggested when he demanded representation upon the Santa Fe board.

G.—If the policy of purchasing and controlling stocks in competing lines is permitted to continue, it must mean suppression of competition.

The Commission concludes by making the following three recommendations:

First—The function of a railroad corporation should be confined to the furnishing of transportation. Railroads should not be permitted to invest generally in the stocks, bonds and securities of other railroad and of steamship companies, except connecting lines, for the purpose of forming through routes of transportation, including branches and feeders. It is in the interest of the public to facilitate the consolidation of connecting lines.

The credit of a railroad company is founded upon the resources and prosperity of the country through which it runs. Its surplus funds and credit should be used for the betterment of its lines and in extensions and branches to develop the country contiguous to it. The testimony taken upon this hearing shows that about 50,000 square miles of territory in the state of Oregon, surrounded by the lines of the Oregon Short Line Railroad Company, the Oregon Railroad & Navigation Company, and the Southern Pacific Company, is not developed; while the funds of those companies which could be used for that purpose are being invested in stocks like the New York Central and other lines having only a remote relation to the territory in which the Union Pacific system is located.

Railroad securities should be safe and conservative investments for the people. To this end the risks of the railroad should be reduced to a minimum. Everyone knows that railroad securities fluctuate more or less, according to the prosperity of the times, and also by reason of the wide speculation in such securities. It, therefore, adds an element of hazard to a railroad's capital and credit to have its funds invested in the stocks of other companies, thereby endangering its solvency and its ability to pay reasonable dividends upon its own capital stock. It is a serious menace to the financial condition of the country to have large railroad systems fail to meet their obligations or go into the hands of receivers, and the object of legislation and administration should be to lessen the risks of railroad investments.

Second—It is contrary to public policy as well as unlawful, for railroads to acquire control of parallel and competing lines. This policy is expressed in the Federal laws and in the Constitutions and laws of nearly every state in the Union. We have examined the Constitutions and laws of all the states, and find in about 40 of them prohibitions against consolidation of capital stock or franchises of competing railroads, of the purchase and acquisition by a railroad of competing lines. Competition between railroads as well as between other industries is the established policy of the Nation. And while the acquisition of a small minority of the stock of a competing line might not decrease the competition, yet the acquisition of any considerable amount of stock, with representation on the Board of Directors of such railroad, unquestionably has the effect of diminishing competition and lessening to that extent its effectiveness. So long as it is the policy of the General Government and of the states to maintain competition between naturally competing lines, the ownership of any stock by one railroad in a competing railroad should not be permitted, and such lines of railroad should be prohibited from having any common directors or officers.

Third—The time has come when some reasonable regulation should be imposed upon the issuance of securities by railroads engaged in interstate commerce. We are aware that in the construction of new lines of railroad, developing new territory, as it has been necessary in many instances to sell railroad securities at large discount, and to sell bonds with stock bonuses, and even in such cases it has many times been difficult to raise the necessary capital. Men will not invest their money and take the risk for small rates of interest.

But this principle does not apply to old established railroad systems having good credit. Such railroads should be prevented from inflating their securities for merely speculative purposes. Railroads should be encouraged to extend their systems and develop the country. It is of the utmost importance also that railroad securities should be safe and conservative investments for the public, and should yield good and ample return for the money invested. Reasonable regulation will tend to make them safer and more secure investments, and thereby benefit not only the railroad companies but the public.

Socialism and the Railroads.*

BY COL. H. G. PROUT.

We stand face to face with a situation in our national life of great gravity. We are at this moment in full movement of an historical epoch of deep significance to us as individuals, to our nation and to the human race. The situation which I have in mind is created by the attitude of the American people toward aggregations of capital. Great individual fortunes, corporations, trusts so-called, any devices by which a few men can control large amounts of money, have become objects of suspicion and of active hostility to a great part of our fellow citizens.

AN HISTORICAL PARALLEL.

The situation has a close historical parallel in the French Revolution. Then the sense of injustice became intolerable and the plain people cut off the heads of the king and the nobles and burned their palaces and confiscated their lands. The Texas editor who wants us to hang the bankers would have sent his thrifty neighbors to the guillotine if he had lived in France in 1793. Will the resentment of the mass of the American people go as far as to destroy great property values, to impoverish those who have been so wicked as to make a little money and to invest it in the securities of productive enterprises? They have begun the process without knowing what they are doing. Will they go on with it?

This is the most solemn question that has confronted this nation since the Civil War. If we stand aside and allow the answer to the question to be determined by that great class of politicians

*An address delivered before the Traffic Club of Pittsburg.

and editors who try to sit on the top of the wave of popular feeling and drift with it, in the hope of being landed high and dry on some sunny slope of personal prosperity; if, I say, we allow the answer to this solemn question to be determined by that selfish and irresponsible class we deserve the calamity that will no doubt overtake us.

I have tried briefly to state, in general terms, the situation now before this nation. Let us try to bring it a little nearer home. Let us see how it especially affects the railroads. I speak as a railroad man, because I have got most of my living from the railroads, and for years I have been a friendly and sympathetic student and observer. Some folks say I have been a partisan of the railroads.

The attitude of the people of the United States toward the railroads of the United States is one of the strangest social phenomena within my observation or reading. Consider for a moment what the railroads have done in the history of this nation. The building of the United States was the most colossal real estate enterprise the world ever saw or ever dreamed of. Nothing like it can ever happen again; nothing approaching it. It would be impossible to estimate the value of the part played by the railroads in this real estate operation which we call the building of the nation. It would be almost impossible to overstate it. With pride and with amazement I think of the enterprise, the courage, the genius of the men who risked reputation and fortune in pushing railroads over the uninhabited lands or the thinly peopled areas of our country in the second and third quarters of the century just closed. Those were the heroic days when men had dreams and saw visions. Those were the glorious days of the youth of the nation. States and counties and towns stood and beckoned to the railroad builders, and gave them franchises and rights of way and local bonds. That is why to-day a four-track railroad runs trains at sixty miles an hour over a street crossing at grade through a great city. It is not because the railroad man is depraved or reckless, but because the pioneers said, "Come, help us build the city; help us to get rich"; and the men and women of this land and of England and of Holland, who had saved up a little money, ventured their savings in this colossal speculation, lost their savings very often, and made it possible to build us the cities to cover our continent with a network of railroads.

RAILROADS AND THE PUBLIC.

It is not strange that under the conditions of our railroad building unwise things and wicked things were sometimes done. We are all foolish and wicked, more or less, and the measure of our folly and of our sin is largely a question of opportunity and of the moral atmosphere in which we live. The building of the railroads and of the cities and of the villages of this continent, the building up of the great industries in steel and oil, in packing and in milling gave abundant opportunities, and the builders did not have very much time to stop and think. It was not strange that indiscretions should have been committed in finance and in the relations of the railroads to the traders and the manufacturers of the nation. It is not strange that certain somewhat crude notions should have been established as to the correct relations of railroads to society.

Twenty years ago last March the Interstate Commerce act went into effect. At that time most railroad officers took a very simple view of their obligations toward the public. It was commonly held that a railroad belonged to its stockholders; that the stockholders had put their money into the property and were responsible for its debts; that the duty of the hired man, viz., the president, the vice-president, the general manager, the traffic manager, the division superintendent, and so on down, that the duty of this hired man was to make money for the stockholders, to enable them to pay interest on the bonds, to eventually clear off the debts resting upon the property, and to gradually increase the value of the equities in that property. In brief, the general view taken was that a railroad property should be managed just as a mill is managed, or a dry goods store, or any other large property. It was held by the thoughtful railroad man of twenty years ago that the relations of the railroads to the public would be properly established and maintained through the action of enlightened selfishness. It was believed that in the long run the interests of the railroads and of the public were the same; that the railroad's officers would appreciate this fact, and that the public would appreciate this fact, and that just and harmonious relations would work themselves out exactly as they do in all other human affairs. My instincts and my habits of thought tempt me to still believe that to be the sound view of the relations of the railroad to society; but in the twenty years that have elapsed since the Interstate Commerce act went into effect there has been a great change in the public conception of what we may call the political economy of railroads, and there has been an important change in the minds of a considerable number of railroad officers. This change has come about very largely through the incessant discussion of railroad matters that has been stimulated by the constant activities of the Interstate Commerce Commission.

THE PREVAILING IDEA.

The notion has now become very prevalent that the railroads are not to be treated as private properties, but as public institutions at least as quasi-public institutions. A great number of our fellow citizens, including therein many of the most intelligent railroad officers, now believe that railroad affairs should be subjected to Government control. I should say that a majority of our fellow citizens believe this. The question of difference is simply as to the degree of control that the States or the Federal Government are permitted to exercise. Personally, although I am a Republican in politics, in political economy I am a Democrat of the old school, and I have a thoroughgoing and fundamental belief in the doctrine that the Government is best which governs least, I contemplate with dread an enlargement of the functions of Government, and particularly the invasion of the field of railroad control by the officers of the State and Federal Governments. But I recognize that control of the railroads by the various governments within our country is bound to be tried on a very considerable scale. I still believe that it will fail, except in some broad and simple way; but I am quite sure that we shall go through a good many years of experiment with railroad control. This theory of the control of railroads is only one manifestation of the wave of socialism which is sweeping over the country and which has one of its principal fountains in the White House. It is the oncoming of that great wave which alarms me for the future of our country, and which has such special menace for those who are responsible for the prosperity of the railroads.

I have spoken of the attitude of our people toward the railroads as a strange phenomenon. This is true when you think of the part which the railroads have had in building the country, and when you think further of the part that the railroads play in our daily life. Outside of agriculture, railroading is the most important industry in the country. It employs more men than any other industry except agriculture. It pays out about eight hundred and fifty millions of dollars a year in wages, being 60 per cent. of the total operating expenses. It pays in dividends $238,000,000. The wages and taxes paid by the railroads amount to nearly four times as much as the dividends paid on railroad stock; in fact, the dividend payments amount to only about three and six-tenths per cent. on the stock; ten years ago the dividends paid amounted to but one and seven-tenths per cent. A little more than 37 per cent. of all the railroad stock of the country pays no dividends. Ten years ago about 70 per cent. of the railroad stock of the country paid no dividends. These few figures give a notion of what the prosperity of the railroads means to the working people and to the manufacturers and traders of the country, and they give us a notion also of the really very small returns which railroad properties make to their owners.

IMPORTANCE OF RAILROADS.

I shall not trouble you with any recital of the well-known figures of ton-miles and passenger-miles by which we measure the public service of railroads, but I will call your attention to the fact that there is not a human being in our nation, there is hardly a civilized human being in the world, whose life is not every moment affected by the railroads of the United States. The prosperity and the happiness of every man, woman and child in the civilized world depends more or less on the prompt, cheap and regular movement of freight over the railroads of the United States. Here in the United States, the prompt, cheap and regular movement of freight is, excepting the crops, the most important element in our daily happiness and in our continued prosperity. The appreciation of this fact is one important element in the intense popular feeling against the railroads.

But people do not know how light is the burden of the transportation tax. They do not know that we have the cheapest freight rates in the world and the best freight service. They do not know that the free play of commercial forces uncontrolled by governments has given us a flexibility and an adaptation of rates and service such as no other country has ever seen. They do not stop to think that an eight-cent loaf of bread has paid one-third of a cent for transportation from the wheat fields of Dakota to the freight station in New York; that is, one twenty-fourth of its cost to the consumer is transportation tax. They do not stop to think that a mechanic, working one day, earns enough to pay for the transportation from Chicago to Liverpool of his food for one year. A long time ago Abram S. Hewitt said that Sir Henry Bessemer was the great apostle of Democracy, that he had done more than any other one man to destroy the power in Great Britain of the privileged classes. He meant that Bessemer's discoveries and inventions had reduced the cost of transportation and so brought down the cost of living and enabled the poor man to cut himself loose from the soil of the little parish or county in which he had been reared. Cheap transportation had opened up to the poor man the markets of the world from which to draw his food and clothes, and had given to him the markets of the world in which to sell his labor.

These are elementary facts that I am reciting, but it is well for us to get back now and then to elementary facts, in order that

we may see our way more clearly through the complex conditions that surround our daily lives.

RAILROADS MUST HAVE MONEY.

If the railroads are going to continue to do their part in the further development of our country and in the further progress toward liberty, happiness and prosperity of all the people of the earth, it is obvious that they must not be hampered or crippled. This principle applies to their administration and to their financial credit. That their administration may be the most efficient, the freest play must be given to the operation of the great elements of ambition, energy and enterprise; and that they may be able to finance their future requirements, their credit must be sustained. You will remember that Mr. Hill has lately said that the money requirements of the railroads of the United States to meet the natural demand of our growing population will be about eleven hundred million dollars a year for five years. Mr. Loree, a clear-headed man with a gift for analysis, has lately told me that he had gone through his own estimate, independently of Mr. Hill, and had arrived at nine hundred million dollars a year as the natural requirements of the railroads.

RAILROADS MISREPRESENTED.

I have already told you that the railroads of the United States are paying now only about two hundred and thirty-eight millions a year in dividends, and that over 37 per cent. of railroad stock pays no dividends, and that ten years ago 70 per cent. paid no dividends. It is obvious that they cannot earn the money to extend and improve road and equipment to meet the proper requirements of our people. Where are they to get it?

I shall not stop here to consider the debated and debatable question as to who is the most powerful in destroying the credit of the railroads—the financier who represents what the President calls predatory wealth, or the President himself as representing the wrath of the people. I merely point out that at this moment the railroads are between the devil and the deep sea; and, further, that anything which cripples the railroads is a calamity of the first magnitude for the nation.

It is a national misfortune that the railroads are so generally and systematically misrepresented in the public press. Fair discussion, discussion in the spirit of justice and truth, is almost never seen in the daily newspaper treatment of railroad matters, whether it be of accidents, of freight rates, of passenger rates, of whatever may be the subject under discussion. The consequences of this attitude are most serious. Indeed, I go so far as to say that the malicious wrecks that have occurred lately should be charged to the editorial offices of the daily newspapers. By those newspapers the railroads are treated as outlaws. People of feeble reasoning powers and of emotional temperament are easily led to think that it is proper to attack an outlaw in any way that amuses them or gratifies their hatred or envy.

That predatory wealth of which the President is so fond of talking has really very little to do with the policy of the railroads of the country in general. Perhaps the President himself would be surprised to know how little, although I am inclined to think that he does know, and that he says more than he really believes, as a part of his general scheme of keeping the Republicans in power and keeping the Democrats out of power. It has been suggested that when Bryan went in swimming the President stole his clothes and ran off with them. At any rate, the President has maneuvered Bryan and his followers out of all their really strong positions.

PREDATORY WEALTH AND RAILROADS.

But predatory wealth has very little to do with the policy and conduct of the railroads. You know and I know that the great mass of the owners of the railroads are honest and law-abiding citizens. You know and I know that the directors and administrative officers of the railroads are just like the rest of us—no better and no worse. In intelligence and executive capacity they rank high, because they are disciplined in an exacting school, and they are selected because of their capacity to carry responsibility. In moral character they are probably above rather than below the average. The assumption that they are scheming to cheat their neighbors, that they are trying to contrive ways to annoy their patrons, that they are indifferent and incompetent in practical operation of their railroads, would sound childish if it were not so serious and so far-reaching in its consequences.

Of course, we know that wrong things are done by railroad officers. We have heard, for instance, a great deal about rebates; but if we reflect, we discover that rebates are not new, simply they have been made illegal. We know that they have been used for years, and even for generations, as a means of building up communities and industries along lines of railroads. Probably, in the primitive times many of those railroad managers who granted rebates thought that they were doing a correct and public-spirited thing. Unfortunately, correct notions about these matters are almost never presented in the daily press. It is unfortunate, too, that there are so few men having exact information and correct judgment on these matters who have time and disposition to write or speak for the education of the public. In that respect the death of Mr. Samuel Spencer was a great loss to the railroads. He was one of the few railroad officers of high rank and of great experience who had the faculty of analysis, and clear, simple and attractive presentation, and, who, joined to that faculty, had the consciousness that it was his duty toward the railroads and toward the public to speak and write on the social science of railroads, as opportunity offered.

I am afraid that what I have been saying sounds a good deal like the Lamentations of Jeremiah; and I am afraid that, like Jeremiah, I can suggest no very practicable and easy way of bettering the conditions that I have tried briefly to put before you. Some things do appear to me, however, as being quite practicable and useful.

BUILD UP CORRECT PUBLIC OPINION.

It seems to me that it is a duty of the officers of the railroad companies, and those who are closely related to railroad companies, and who have means of special information, to try to build up correct public opinion. This some of us can do by talk with our neighbors; some of us by occasionally writing for publication here and there; some of us by an occasional public speech; some of us by direct personal contact with our Senators and Representatives in Congress and the members of our State Legislatures. It seems to me that this is an obvious and neglected duty that all of us can perform, and, in the aggregate, with a good deal of profit, and it is a duty, not to the railroads alone, but to the nation.

Beyond this, there is a good deal that every railroad man can do in his daily business life. Much of the public feeling against railroads has its root in little disagreeable things in the relations between subordinate officers and employees and the public. Quite a number of years ago it became my duty to spend three or four weeks among the railroads in England. As I was coming away, I went to say good-by to the general manager of the Great Northern Railway, to whom I was under obligations for courtesies. I told him that I had been running about in yards and stations and railroad warehouses and a lot of places where I had no business to go, that I had practically lived on the railroads for three weeks, and that, from the time when I set my foot on the British Islands until the moment of leaving, I had not had an uncivil word or act from any British railroad servant. This did not seem a very surprising thing to the general manager, but it was a very rare and surprising thing to me. In our own country it is the exception to get civility from the minor officials and employees. Every time that a man buys a ticket he runs the risk of more or less gross incivility. It would be hard for us to overestimate the accumulated influence of the display of bad manners toward the public, so characteristic of the minor officials of the railroads of our country. I have not the slightest doubt that this has been an influence of very great importance in creating the widespread hostility of which we see so many signs and which is expressing itself now in costly and disastrous legislation.

CLAIM DEPARTMENT OBSTRUCTION.

I wonder how many of you ever thought of the relation between the claim department and hostile legislation. To the outsider, it seems as if the claim department of a railroad was a highly efficient organization for obstruction. The desire to ascertain the truth and to help the shipper, or the consignee, or the person who has suffered damage or injury, to get justice, is apparently no part of the duty of the claim department. Of course, I am aware of the fact that the railroads must protect themselves against swindling claims; but I do protest that it is contrary to the instincts of the Anglo-Saxon to be considered a swindler until he proves himself an honest man. Do you wonder, when you think of these things, that the great, self-respecting, proud American public, with a keen sense of its own rights and dignity, should resent that sort of treatment?

I told you at the outset that I consider myself a railroad man, and that I speak with the greatest friendliness; in fact, these little matters of discourtesy, injustice and arrogance slide off from me like water off a duck's back, because I know that the men who do these things do not properly represent the gentlemen above them, and it has been one of my principles of conduct to try to cultivate a sense of humor and not give undue importance to little things. But I have ventured to remind you of these little things by way of showing you one way in which you can help your railroads and your country, namely, by incessantly instilling in the minds of your subordinates the prime duties of courtesy, patience and fair mindedness in dealing with the public.

The railroad ticket tax imposed a year ago by the German Empire was estimated to produce about 24,000,000 marks the first year. The Secretary of the Treasury recently announced that the prospect is that only about 12,000,000 marks will be realized by it. The diversion of travel from the higher to the lower classes has been greater than was estimated.

New Top-Mast Motor Signal.

The General Electric Company, Schenectady, N. Y., is now bringing out after a long and severe test under all weather conditions a new two-position electric motor signal of the top-mast type, similar in outward appearance to its three-position signal, with which the reader is familiar. This signal, shown in Figs. 1 and 2, and known as the M-113, embodies several new and interesting mechanical and electrical features.

Figure 3 is a back view of the signal mechanism in the position corresponding to the proceed indication of the blade. The supporting frame of this mechanism, carrying the bearings for the shaft and gearing, also forms the case, which is weather proof. The bottom of the case *A* forms a socket by which it is secured to the top of the mast, and inside this socket is a removable insulating bushing *B* which eliminates possibility of grounding, even if the wiring comes in contact with the case or an insulation is broken down. A similar socket *C* is provided at the top of the case to hold the pinnacle, or for an extension of the mast, in case one or more signals are to be placed above it.

The form of the case is such that, with a suitable bracket (*D*) for supporting the lamp, any of the present standard semaphore spectacles may be used. The whole external design presents a symmetrical and graceful appearance. The motor is similar to that used in the other type of the General Electric Company's signals, except that it is provided with both series (*E*) and shunt (*F*) field winding, and with a ball ratchet to prevent backward rotation of the armature. The object of this modification is explained below.

The high speed gear and the motor pinion are protected by a case attached to the inside of the frame, while the intermediate

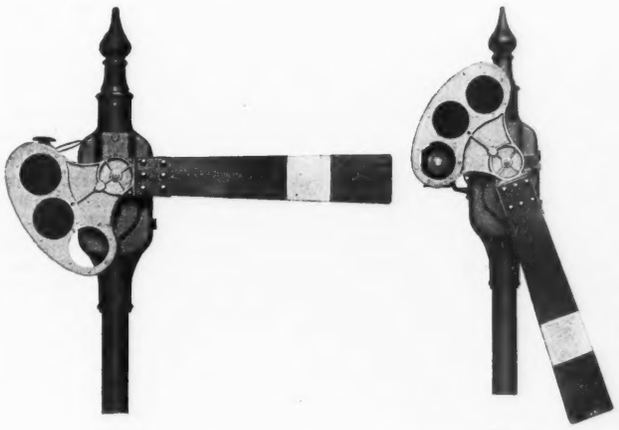


Fig. 1. *Fig.* 2.

General Electric Top Mast Signal.

gear and its pinion are protected by a gear case made of a single piece and bolted to the outside of the frame, with which it makes a weather-proof joint. To the face of the main gear *G* are attached driving pins of case-hardened steel, which move the signal from stop to proceed position by engagement with the pawl *H* of the slot-arm. The slot-arm *J* is mounted on a squared portion of the signal shaft by means of a broached hole in its hub, and carries a magnet *K*, the armature *L* of which is attached to one end of a bell crank lever, which by a pawl at its other end engages with the driving pins whenever the slot-magnet is energized. The series coil of the slot-magnet is connected in the motor circuit, and the shunt or high resistance coil is connected outside of the control contacts which break the motor circuit. Current is carried to the slot-magnet without the use of flexible moving wires, segmental collector rings and brushes being employed as in other G. E. signals.

On the signal shaft, directly back of the main gear, is mounted an eccentric *M*. The strap of this eccentric is cast in one piece with the cylinder of the dash-pot, or buffer, *N*. In front and also connected to the main shaft is a counting device *O* for registering the number of signal movements.

When the signal circuit is closed, current will flow through the shunt coil of the slot-magnet, and in another circuit through its series coil, and thence through the motor control sector *P* and its contact fingers *Q* to the motor. The slot-magnet being energized, the pawl *H* is held in the path of the driving pins, and as the motor revolves one of these pins is forced against the pawl, thereby turning the slot-arm and the signal shaft to which it is connected, thus carrying the signal arm toward the proceed position. When the arm of the signal comes almost to its extreme "proceed" position, the motor current is broken by means of the controller *P*, but this breaking of the current does not arrest the movement of the signal, for the inertia of the revolving armature and other parts keeps it going. With the shunt field winding, the motor driven by its own inertia becomes a generator, maintaining its field excitation. Immediately after the circuit between the motor and the battery is broken, a low resistance circuit is closed between the motor brushes, thus converting the motor into a powerful electric brake to arrest further movement of the signal. As soon as the motor stops, the ball ratchet, above mentioned, prevents any backward rotation of the armature, and the signal is thus held in its clear position until the main circuit between the signal and the battery is opened. The circuit-closer for electric brake control is shown in the cut at *R*. At *S* are a number of closers for extra circuits. The glass cover of the commutator is shown removed at *T*.

It will be understood that the higher the voltage of the battery and the less the friction of the machine, the greater will be the speed of the motor at the time the battery current is cut off, and the greater will be the inertia of the moving parts. It is also evident that the greater the speed of the motor the higher will be the E. M. F. generated in its armature, and the greater will be the

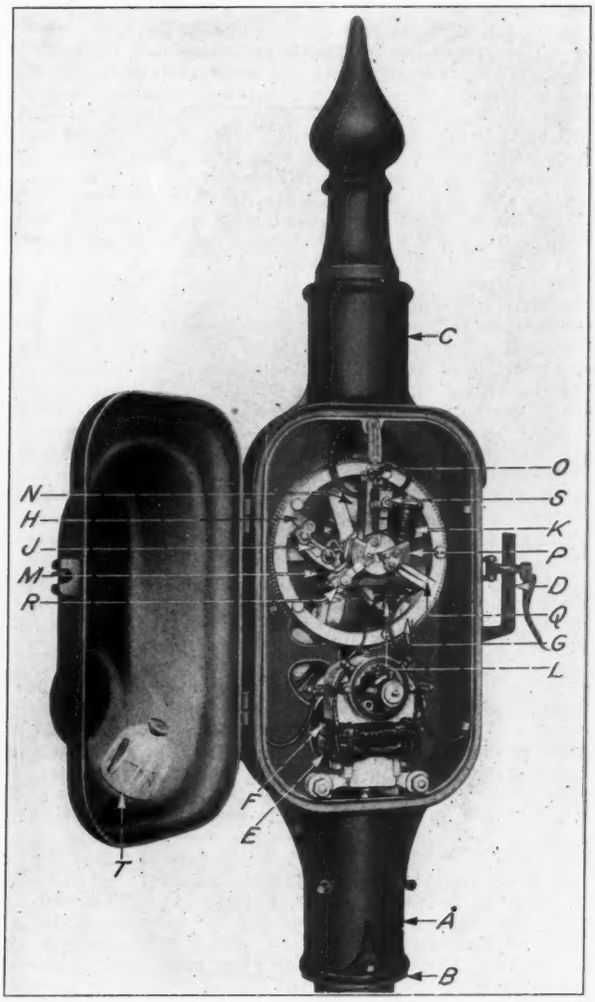


Fig. 3—General Electric Company's Top-Mast Semaphore Mechanism.

current opposing its forward movement when it is acting as a generator. Therefore the motor will make approximately the same number of revolutions after its current is broken, stopping the signal arm at the same position under all conditions; so that a friction brake is not needed.

When the main signal circuit is opened and the slot-magnet de-energized, its heavy armature falls away from the poles, this movement being also assisted by the pressure of the driving pins against the pawl. The pawl being thrown back from engagement with the driving pin, the signal is free to assume the position to which it is normally carried by gravity. As the signal arm comes to its stop position, the rotation of the slot-arm causes its armature to swing back against the poles of the magnet, so that it is in position to be held firmly in place when current is again applied.

While this signal was specially designed for use in two positions only, it can be operated as a three-position signal when an extra circuit controller is used, and a back contact provided on the line relay. When used as a three-position signal, and when indi-

cating a train backing into the section of track for which the signal gives distant indications, the arm will go from proceed to stop before assuming the caution position. Where such a movement is not objectionable this signal is applicable.

The design of this signal is such that all parts are readily accessible, and they are easily removed from the case, when necessary. The motor and other parts are readily reversible to provide for moving the signal either up or down from the horizontal position.

Progress in the Philippines.

The following are quotations from an interview, published in the *Journal of Commerce*, with Charles A. Conant, one of the directors of the Manila Railway, a New Jersey corporation, through which the Speyer syndicate is building new railroads in the Philippines. The Manila Railway has taken over the Manila & Dagupan, the only steam railroad now in operation in the islands. In regard to the proposed extensions of the Manila Railway, Mr. Conant said:

About 428 miles of new line will be built on the island of Luzon. The existing line, which was opened some 14 years ago with English capital, runs for about 120 miles from the outskirts of Manila to Dagupan, almost due north, and also includes 88 miles of branches. It is now proposed to extend this line some 35 miles farther north to San Fernando de la Union, and to build a number of spurs and branches connecting with Manila the principal towns of the western part of the island. There will also be a detached line of considerable length built at Albay Province, the southeast peninsula of Luzon, which will connect with the steamship line and open up territory which could be reached only by a very circuitous route if it were all rail from Manila.

The railroad receives no grants of money or property, directly or indirectly, in connection with this construction. The United States Congress authorized the Government of the Philippine Islands to guarantee 4 per cent. interest for 30 years on bonds issued for the construction of lines in the Philippines. The Philippine Commission advertised for bids under this law, and bids for construction with guaranteed bonds were accepted for certain detached lines in some of the other islands. In the island of Luzon, however, the Manila Railway was so firmly established that it was not easy for any rival syndicate to cut the ground from under its feet, even with Government aid. Mr. Speyer, therefore, after offering to build some aided lines in connection with others which were to be unaided, decided finally to ask simply for franchise rights for the proposed extensions, without asking any financial aid from the Government. He felt that under such a grant the railroad would have greater freedom in choosing its routes and conducting its operations, and that with entire responsibility for its finances it would not be tempted to enter upon projects which did not commend themselves to its own engineers.

The Manila Railway originally received a subsidy from the Government. There is a curious story about that. The Spanish Government was so eager to encourage railroad building that they provided in the charter of the Manila Railway for a regular annual payment of interest on a part of the cost of construction. Such payments were suspended by the American Government. An effort was made to set up the claim that it was not a continuing obligation of the governing power, since the sovereignty had changed hands. It is doubtful if the courts would have sustained the repudiation of an official contract on this ground alone; but it was contended that the road had allowed its tracks and rolling stock to be used by the insurgents, and especially for carrying on trade, in violation of the orders made against trading with provinces which were in revolt. The railroad, on the other hand, put in a claim for heavy damages to its property and loss of revenue by the seizure and use of its cars and locomotives for Government purposes. While the road had large claims against the Government under these heads, there was a clause in the original contract which might have hampered the road materially if it continued to grow. This was a stipulation that when the gross receipts exceeded a certain amount a large payment was to be made into the public treasury. The road has been so successfully conducted since the insurrection terminated in 1901 that considerable amounts have accrued under this obligation to the Government. Thus there was a condition of claims and counterclaims. The railroad cut the Gordian knot by renouncing all claims against the Government in return for a renunciation by the Government of its claim to a share in the earnings of the road. The road, however, will pay into the public treasury a percentage of its gross receipts. This percentage will increase at fixed dates.

The extension of the railroad is the one step needed to put the islands on the high road to commercial prosperity. We have become so accustomed to railroads that we hardly realize their economic importance. They not only open up new sources of production, but they afford a safeguard against starvation in times of uneven crops and protection against political revolution, which are very important. A railroad corrects the variability of the crops by permitting the surplus product of one province to be taken to another where the crop may have failed. Millions of lives have been saved in British India through this one fact. In China in the great famines it has often been the case that thousands have perished because the transportation facilities did not exist to bring to them the contents of the bursting granaries of other sections. From a political point of view the railroad and the telegraph render attempted revolution difficult, because they permit prompt transmission of news and prompt despatch of troops to the center of disturbance.

Railroad development has been slower than some anticipated when the American occupation began. It is still less than six years, however, since Governor Taft superseded the military authorities with the full powers of civil government. Six years is but a day in the life of a nation, and it could not be expected that everything would be accomplished in so short a time. Much has already been done, however, to develop the island commercially and more undoubtedly will be done in the near future. The new breakwater at Manila, which is now practically completed, will make the city, with the proposed new piers, the best equipped port in the Orient. A contract has recently been awarded for about $443,000 for two large steel and concrete wharves, one 600 by 70 ft., the other 650 by 110 ft. The military authorities have already completed a wharf for their own use, and on September 12 last the transport 'Logan' lay alongside it to unload—the first large transpacific liner to lie beside a pier in the Philippines. All harbor dues have been abolished in the islands, and as tonnage and light dues had already been done away with, Manila is now a free port, so far as shipping is concerned. The American warehouse system permits the free transshipment of goods destined for delivery in other Oriental countries, and should aid in making the city and bay of Manila a great distributing center. The harbor has been dredged to the depth of 30 ft. wherever such a depth is desirable. Within a year transportation has been put on a healthy commercial basis by doing away with the Government inter-island steamers, which were absolutely essential for military and civil purposes when the islands were in a state of confusion, and letting the mail and transportation contracts to commercial companies.

American capital has been going into the islands. This subject is discussed in the annual report of the Philippine Commission for 1906. Among the cases there cited of the employment of American capital are the contracts for the harbor works let to Americans, not only at Manila, but at Iloilo and Cebu; the adoption of a modern telephone service in Manila, which will be gradually extended throughout the island of Luzon; electric lighting plants at Iloilo and Cebu; the traction system in the city of Manila, which has been substituted for the dirty little horse cars in which no European or American would ride, a modern electric service; contracts for new water-works and sewer systems for the city of Manila; one of the inter-island transportation companies, and large companies for getting out lumber, for printing, for the manufacture of cocoanut products, for distributing American machinery, and for many other purposes. It is declared by the commission that all this progress has been made, not by depriving Filipinos of industries that before were theirs, but by the introduction of new capital and new business sagacity that have enabled Filipinos in nearly every case to obtain greater and larger remunerative employment and greater prosperity than ever before.

The Harriman Lines and Reciprocal Demurrage.

The following is a letter addressed to officers and agents of the Union Pacific signed by A. L. Mohler, Vice-President, and General Manager of the Lines East of Green River:

Agitation in favor of the enactment of state and national laws embodying that which is misnamed "reciprocal demurrage" is based to a very large extent upon a misunderstanding of present conditions and the results which would follow such legislation. It is important that employees of this company, coming in contact with the shipping public, should be posted upon the underlying principles of the subject in order that they may be able to present to the advocates of such legislation the unfairness as well as the consequence thereof. The question of adequacy of car supply naturally divides itself under the following headings:

(A) Freight locomotives and cars represent about one-fifth of the total capital invested in a railroad, and are practically the only portion of the property which provides revenue; the value of the remaining four-fifths depending entirely upon the use made of this one-fifth.

(B) Locomotives and cars can only be of value to their owners when moving under load or towards the loading point. Promptness of despatch in transit and methods adopted by railroads to secure increased daily loaded movement of cars.

(C) Cars are at times very valuable to consignees for storage purposes on the basis of the present low demurrage rates.

One of the most important questions that has engrossed the attention of the entire country during the past few months has been the inadequacy of freight car supply to meet the extraordinary

demands made upon our railroads to move a freight traffic unprecedentedly heavy by reason of bumper crops and the prosperous condition of all lines of industry throughout the country. Whilst this unusual state of affairs has taxed even the financial resources of the government in furnishing funds required through activity in money centers, and has resulted in congestion and overworking of existing facilities in all branches of trade, with shortage of labor, higher wages and higher cost of living, etc., it has been to railroad transportation to which inquiry has been practically alone directed. Yet, it can be truthfully said that the railroads, of all others, because of their past experience and their close touch with the pulse of business progress, long ago anticipated the present increased traffic, as well as anticipated what would naturally follow leading up to a shortage of cars, as it was self-evident with the tremendous growth of prosperity, consignees' and consignors' warehouse and storage facilities would be overtaxed, resulting in more cars being tied up for storage purposes, which alone contributed more to and stimulated more the shortage of cars for the movement of traffic than anything else.

While this is true of the railroads in general, we can more confidently speak of what has been done by the Harriman lines as a whole, with which we are connected, operating about 15,000 miles of main line westward from Omaha, Neb.; Kansas City, Mo., and New Orleans, La., to Los Angeles and San Francisco, Cal., and Portland, Ore., traversing states whose area is half that of the entire United States. During the past year on no part of the line has there been an insufficiency of equipment to move traffic. The San Francisco fire of April 18, 1906, completely destroyed the facilities for receiving and storing freight at by far our greatest traffic center, causing an aggravated blockade, tying up at its maximum over 6,000 cars, or 9 per cent. of our entire equipment. As it was impossible to reproduce the destroyed facilities, we had, under the circumstances, to be extremely lenient with consignees, and the congestion continued in greater or less degree for nearly six months. During this time local points along the line of the Union Pacific proper were largely dependent upon receiving empty car equipment from California, which had moved west under load, and as sufficient empties could not be sent east, this contributed its portion to the car shortage in the Middle West.

During the past five years the Harriman Lines have anticipated, perhaps, as much or more than any other system, the increasing development of the territory they serve, and have made vast additions to their rolling stock, the expenditures for which in this period have amounted to over $60,000,000. In the five years, 1902 to 1906, including equipment under contract, we have purchased 1,194 new locomotives and 40,196 new freight cars, most of these being steel cars which require less repairs, will be less time out of service, and therefore capable of handling a greater traffic than the wooden ones. Our car orders for this year alone amounted to 14,000 cars, or 20 per cent. of our entire equipment.

All of the engines are of the heaviest hauling capacity used anywhere, bringing our locomotive standard to as high an average condition and efficiency as exists on any road in the United States, whilst the cars added were principally of 50 tons carrying capacity with steel underframing. This new equipment is equal in tonnage carrying capacity to over 70,000 cars of the standard type used only a few years ago, and is far greater in tonnage capacity than the entire equipment owned only four years ago. In this time we have added over five tons to the average carrying capacity of every car we own. This great activity in car construction has been carried on during a time of extremely high material and labor prices, extra cost being added for steel construction to lessen damage from accident, the cost of our new cars being nearly double that prevailing 10 years ago.

To show how our lines have increased their equipment in advance of traffic requirements, below is given a statement going back four years to 1902 and looking forward to 1907 when we shall have received the equipment really ordered in 1906, but which will not be delivered until the spring of this year:

	June 30, 1902.	June 30, 1906.	Increase over 1902.	June 30, 1907.	Increase over 1902.
Tons of freight carried one mile, thousands.	10,339,057	3,738,198	33 per cent.	14,587,958	41 per cent.
Tonnage capacity freight cars owned	1,638,410	2,177,293	33 "	2,721,776	66 "
Total hauling capacity of locomotives as expressed by total w't on drvrs, tons.	98,720	145,340	47 "	166,505	69 "
Freight train miles	29,576,176	31,579,901	7 "	32,238,032	9 "
Total freight car miles	785,584,562	913,429,442	16 "	945,390,661	20 "

Thus estimating an average increase of traffic for 1907 as prevailed in previous years to move 41 per cent. of traffic, we will have available 66 per cent. more car capacity and 69 per cent. more locomotive capacity than we had five years ago.

The measure of the tax on railroad facilities is the traffic moved during the busiest season. Selecting the heaviest month out of the past three years, we have the following:

Tons of Freight Moved One Mile.

October, 1904	1,201,000,000
October, 1905	1,261,000,000
October, 1906.	1,279,000,000

Thus, in the heaviest period of 1906, we had only 6 per cent. greater traffic than in 1904, and actually had available to move it on account of new equipment provided, 18 per cent. more locomotive traction and 14 per cent. more freight car capacity.

The average speed of freight trains on the Harriman Lines, excluding stops, is about 16 to 18 m.p.h. To meet competitive conditions and to market perishable products, the speed of trains has been increased on our lines and we have established a manifest system under which the movement of a large part of our traffic is vastly expedited and delays eliminated. As a result cars are being handled more expeditiously and moved a much greater distance per day than on the average road, as per the following comparison:

	Miles run per car per annum— Loaded.	Empty.	Total.
All railroads of United States .	5,820	2,660	8,480
Union Pacific system	8,861	2,985	11,846
Southern Pacific Company.....	7,312	2,910	10,222

These averages for our cars are for owned cars only. Foreign cars, which are largely confined to long haul business, we move faster and average 50 miles per day, or at the rate of about 18,000 miles run per annum.

As an aid to more efficient use of equipment, we on June 1, 1904, established on the Harriman Lines a car clearing house, whereby all freight cars owned by all our separate lines are pooled and handled as a common ownership. Under this system cars are expeditiously moved from parts of the system where there may be a surplus to districts where most needed. Our officers everywhere are held to strict accountability for failure to properly watch car movement and utilize equipment capacity. By a rational system of tonnage rating, based on speed requirements as well as tractive power, locomotives are properly loaded to obtain their full value as traffic movers, whilst loading of cars is closely watched and their tonnage capacity utilized to its fullest possible extent. Shipments are combined to save car equipment where it is an object for this purpose on long hauls and where no material delay to freight will result. Elaborate statistics are kept of the use made of cars and locomotives, and officers making a poor record are held to strict accountability. Large capacity cars are kept in long haul business where greatest ton mileage can be handled. Car tracers are employed to check up car movement, and in various other ways we are seeking the maximum efficiency of our equipment, both for economy's sake and to render the best possible service to the public, as manifestly it is to the interests of any road to handle every ton of freight it can. Our equipment is always kept in the highest standard of condition, repairs being made as occasions offer, preferably in the lighter seasons. Our locomotives and freight cars were never in better condition generally than they are to-day. During 1906 we made repairs on 4,344 locomotives and 340,115 freight cars as compared with 329,230 cars in the previous year. For these repairs we expended $17,000,000. All these details, thoroughly suggestive to the mind of any practical railroader of to-day, have resulted in the excellent showing made by the Union Pacific and Southern Pacific Lines as compared with "All railroads of United States" on "Miles run per car per annum" shown in the foregoing tabulated information.

The statement is often made that yard facilities for handling cars have not been increased in proportion to the increased traffic. This is certainly not true for the lines of the Union Pacific and Southern Pacific systems. With each new car ordered computations are made and estimates prepared for additional tracks and terminals to hold the entire equipment ordered, although, of course, only part of it is in terminals at any one time. For example, in the four and a half years since June 30, 1902, with an increase of 15 per cent. in number of cars owned, an increase of 16 per cent. in car mileage and an increase of 17 per cent. in train mileage, we have increased our mileage of double main train 214 per cent. and have added 1,100 miles, or 30 per cent. to the length of yard tracks and sidings. For each car owned we now have 362 ft. of yards and sidings as compared with 322 ft. four years ago.

With the car shortage agitation, the most important question to all railroads has been the detention to cars by shippers and consignees. We have endeavored to clearly show that the increased traffic has been anticipated by the Harriman Lines by the purchase of new equipment, and we might add that long ago anticipating the increased traffic, experience, which proves to be the best teacher, called forcibly to our attention the fact that during the wave of prosperity there would, as before stated, naturally follow a further growth of laxity on part of the commercial world, whose warehouse and storage facilities were overtaxed, to release cars promptly,

preferring to hold and utilize them for warehouse purposes. Stringent and positive instructions were issued long in advance of the heavy movement, impressing upon the minds of our agents and all concerned that they must force consignees to release cars promptly. Only one-eighth of a day is actually required to move a freight car the average distance it is hauled, the remaining time being consumed in terminal yards awaiting movement in trains, on sidings after being unloaded, on yard tracks at disposition of shipper awaiting loads, and, perhaps, more important of all, delayed at stations under load waiting to be released by consignees who are holding to unload or holding on re-consigning orders.

In order to increase the efficiency and promote their own earnings, railroads are always endeavoring to reduce delays for which they are responsible, and if their patrons would lend their aid to do likewise, vast good would be accomplished. The limitation of every railroad system in times of heavy traffic is the terminal situation, and the proper terminal situation depends upon the exertions of every shipper and consignee to unload cars with the least possible delay. Some consignees have ample facilities for the prompt handling of their maximum business, but the reverse is the rule. Many consignees order freight in large amounts expecting to sell it before it arrives, in which effort they are frequently unsuccessful in whole or in part. Much freight is consigned to brokerage or commission houses, the prompt disposition of which depends upon future market conditions. Some consignees with ample facilities delay cars badly by neglect and poor business methods.

These conditions have made necessary the present demurrage rules. The consignees know that the carriers would greatly prefer the cars to the demurrage charges—but unfortunately their preference is the same and the company must perforce permit them to exercise their preference regardless of the interest of the carriers,

A New Monorail Car.

and to the detriment of all other shippers. No railroad company can get any benefit from the prompt loading, unloading and handling of cars without, at the same time, benefiting shippers and consignees, hence the claim of the carriers that existing rules are non-discriminating, reasonable, and in the highest sense "reciprocal."

But the proposed reciprocal demurrage bill includes a provision for penalizing the carrier for failure to furnish cars as called for within a specified time. Legislation to fine a corporation for omitting to do that which is imperative with the self interest of the corporation, is as unique as it is unjust, and could not obtain an audience except under the extraordinary political, commercial and industrial conditions now prevailing. Demurrage is collected from a shipper on account of his converting to individual use facilities furnished by the company for the benefit of the shippers as a whole. Reciprocal demurrage, as planned, is a penalty to be paid by a carrier, not for something it receives or unduly retains, but for failure to supply that which it does not and cannot possess, and from the possession of which it is to a considerable extent debarred by the failure of its patrons as a whole to realize and fulfill their obligations to other shippers and to the railroad company. If the carriers are to be so penalized, actual reciprocity would require shippers to furnish loading at all times for all cars available.

It should be remembered that penalizing a railroad for not furnishing equipment is equivalent to a rebate to a large shipper who has a large holding in manufacturing and elevating interests, thereby defeating the purpose of the Hepburn bill to prevent rebates. Why should railroads be penalized for not furnishing equipment to any greater extent than consignees for not furnishing storage facilities to adequately provide for the business and necessary storage? The consignee feels justified in paying $500 or $600 per year for demurrage in preference to enlarging his facilities at a cost of say $20,000 per year, thereby eliminating the responsibility of interest, taxes and depreciation on the investment which, in a few years, with a decline in business, would be a burdensome one.

The great majority of shippers located on the Union Pacific Company's lines are broad-gaged, intelligent and fair-minded men, and are not in sympathy with any proposed legislation which has for its effect the restriction of prosperity and the discouragement of increases in investments in the way of improved facilities and terminal enlargements. Every large city must have terminal facilities to provide for the growth of such cities, and when such municipality by malicious and unfair advisers prevents the enlargement of terminal facilities by a legitimate and equitable franchise, to that extent the rapid development of that city is retarded.

The officers and employees of the Union Pacific will, at all times, co-operate with patrons and shippers along its lines. The prosperity of shippers is absolutely essential to the successful operation of its property; therefore, there can be no question as to the importance of dividing prosperity between the transportation lines and their patrons; and this company will at all times be found on the side of aiding increased prosperity rather than to encourage conditions which are certain to result in the withdrawal of marvelous prosperous conditions at the present time existing, and which all enjoy, and which, to the writer, appears as the poorest time to grumble.

A New Monorailway.

A working model of a new monorail car which has created much interest in Great Britain, where it has been exhibited, is shown in the accompanying illustration. It is the invention of Louis Brennan, well known as the inventor of the torpedo which bears his name. Equilibrium is maintained by gyroscopic action and the car is balanced on a single rail at all times, whether moving or standing still and under all conditions of wind pressure, shifting load or centrifugal force. The gyroscopic mechanism consists of two flywheels mounted on special bearings in a case from which the air has been exhausted. The air and journal friction is thus reduced to a minimum, and only small power is required to keep them in motion. They are rotated in opposite directions at very high speed by small electric motors taking current from a storage battery placed in the car. The use of two gyroscopes overcomes the tendency toward excessive inclination or variations when running backward or forward. The mechanism occupies only a small space and weighs about 5 per cent. of the total weight of the car.

The model car is mounted on two bogies, each having a pair of wheels. These bogies are designed for free radial and vertical movement to permit the car to round sharp curves and ride easily on rough track. The two wheels of each bogie are coupled, and they are driven by electric motors geared to one wheel. The track consists of a single rail laid on blocks, and for crossing gullies a heavy cable. An experimental track of this kind with steep grades and sharp curves has been built and the model car successfully run over it with loads as high as 150 lbs.

The War Department of the British Government has begun the construction of a large car of this kind. It will be propelled by a gasoline-electric generator set. The motors on the wheels will be provided with change gears for ascending steep grades. This car will be tested for its availability in military railroad work where the monorail track construction would be especially valuable.

Foreign Railroad Notes.

There is pending in the French Parliament a bill providing for old age pensions to railroad employees. This bill was introduced ten years ago, and five years ago was submitted to the President of the Senate. In order to hurry him up a little, on the 8th of June last 400,000 postal cards were addressed to him by as many railroad men in all parts of France, asking his early attention to the matter.

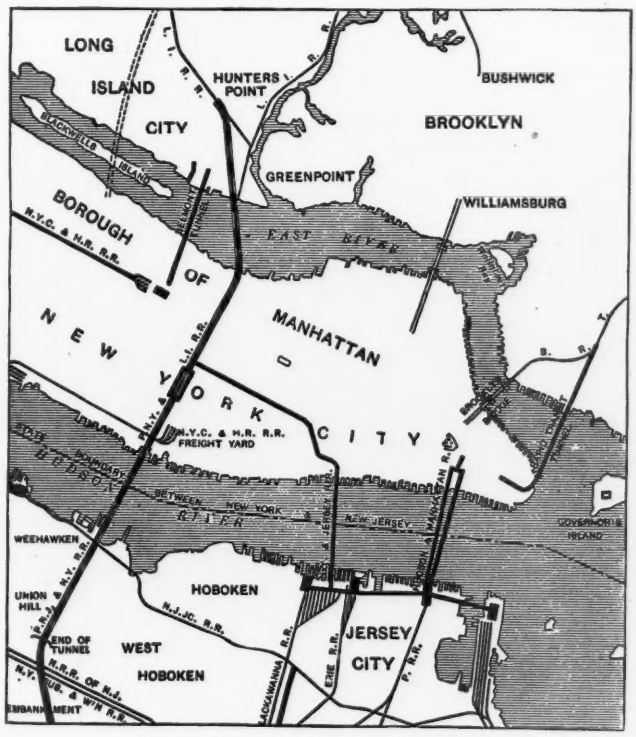
A committee of the Italian Parliament reported a plan for the reorganization of the state railroad administration which has one novel feature. There is to be a "traffic council" to advise as to the public needs in the way of transportation, apparently something like the advisory railroad councils in Germany, and one of its members is to be a journalist. The committee urged that the most important traffic questions are and must be discussed in the press and decided with its co-operation. The Minister of Public Works declared that he would not be willing to select the journalist councillor, and it was thought the appointment would be left to the Italian Associated Press.

Tunneling Operations in New York City.

The accompanying map showing the location of all the tunneling operations in New York City and vicinity is reproduced from a paper by H. T. Ildage, read before the American Institute of Mining Engineers. The following is a brief summary of recent progress on all of these tunnels:

Pennsylvania Tunnel & Terminal (Pennsylvania Railroad)—Double-track approach embankment west of Bergen Hill under construction. Twin tunnels in rock under Bergen Hill to Weehawken shaft about two-thirds excavated; work in progress. Twin tubes under North river to Eleventh avenue, Manhattan shaft, completed and work of sinking foundation piles and putting in concrete lining in progress. Excavation of approach tunnels from Manhattan shaft to station site at Ninth avenue about one-half completed. Excavation for station between Seventh and Ninth avenues nearly completed; erection of steel work in progress. Double-track cross-town tunnels under 32d and 33d streets excavated from East river shafts to a point near Sixth avenue, and work of lining in progress. Four East river tubes under way and about one-half completed. Long Island City tunnels in soft ground completed to portal near Borden avenue.

Hudson & Manhattan.—Both tubes completed under North river between Hoboken and Greenwich street; to be ready for experimental operation by Sept. 1. Open cut extension from Greenwich street under Sixth avenue to 33d street under construction. Tunnel connection between Hoboken and Jersey City under construction. Twin tubes between Cortlandt street and Jersey City under construction. Foundations completed for terminal station at Cortlandt and Church streets and erection of steel work in progress.



Tunneling Operations in New York.

(Tunnels under construction are shown in heavy black lines.)

Interborough Rapid Transit.—Brooklyn extension from Battery loop under East river to Joralemon street, Brooklyn, is partially completed. Both tubes are joined, but work is in progress to reinforce them with pile foundations before concrete lining is put in. Will not be ready for operation for some months to come.

Belmont Tunnel.—From 42d street and Park avenue under 42d street and East river to Long Island City. Work still going on in one tube. Other tube has met and tunnel is nearly completed under 42d street.

New York Central.—Reconstruction of Park avenue tunnel about completed. Work in progress on excavation of west half of new Grand Central Station yard.

Delaware, Lackawanna & Western.—Driving a second double-track tunnel parallel to present tunnel under Bergen Hill, Hoboken. About one-half completed.

For fighting fire in its anthracite coal mines, the Delaware, Lackawanna & Western is using a new form of chemical fire engine. It is built on a truck and can be attached to an electric mine locomotive and rushed to the scene of trouble at high speed. When a chemical engine plays upon burning coal the heavy gases evolved cling to the floor and smother the blaze by excluding the air. Men are not annoyed by fumes and can stay close enough to do effective work. The complexities of mine working have increased in every direction as the thinner and less accessible veins are being worked so that increased attention to fire fighting is necessary.

Rest Requirements on French Railroads.

The Minister of Public Works of France has sent a circular to the railroad managers setting forth the requirements as to the time allotted to employees for rest. This must be at least 52 days a year, and it is desirable that these days should fall on Sunday. Employees whose work cannot be interrupted on Sunday must be granted at least three full days of rest a month. To these three days there must be added at least enough supplementary rest either in whole days or, if Sunday is cut out, in half days, to make up the balance. The days off may be separate or together according to the exigencies of the service and the convenience of the employee. But even where his duties are most exacting, there must be 52 days of rest a year. Where half days are taken, every effort should be made to have them fall on Sunday; and the same rule holds regarding full days; for this reason the managers are urged to reduce Sunday work of all kinds as much as possible.

The New York Central's Electric Lines.

Early in 1905 there was incorporated in New York state the Mohawk Valley Company, a holding company which controls the electric and street railway investments of the New York Central & Hudson River. Its $20,000,000 stock is held, 60 per cent. by that company and 40 per cent. by a syndicate, made up largely of Cleveland and New York men, and headed by Horace E. Andrews, President of the Cleveland Electric Railway. The directors of the Mohawk Valley Company are: Horace E. Andrews, William K. Vanderbilt, Jr., Walter N. Kernan and the following vice-presidents of the New York Central: W. C. Brown, E. V. W. Rossiter, John Carstensen and W. J. Wilgus. The executive organization is: Horace E. Andrews, President; John Carstensen, Vice-President of the New York Central in charge of accounting, and W. K. Vanderbilt, Jr., Vice-Presidents; Dwight W. Pardee, Secretary, and Edward L. Rossiter, Treasurer of the New York Central, Secretary and Treasurer, respectively, and A. L. Linn, Jr., General Auditor.

It is the plan of the Mohawk Valley Company to eventually have a continuous electric line parallel to the New York Central main line all the way from Albany to Buffalo, giving frequent local passenger and express service. Although this will be a continuous line between those points, there is no intention to operate through electric service over it. The fact that it will run through the streets of the principal cities is one reason against this, but the deciding reason is that the very purpose of having a parallel electric line is to leave the tracks of the steam road (which itself will in all probability within a few years be electrified) free for freight and fast through passenger service. The plan is to have the electric line take over, so far as possible, the short distance local passenger travel of the steam road. The superiority of an electric line in offering frequent service and carrying passengers directly to the central streets of the cities makes this possible. To put it concretely, one car every half hour furnishes vastly more satisfactory service for local travel than six cars every three hours. An electric line can offer such frequent service more cheaply than a steam line can run infrequent local trains.

One of the accompanying maps shows the present holdings of the Mohawk Valley Company and the large gaps still left in the ultimate continuous line across New York state. The company controls the whole trolley systems of Schenectady, Little Falls, Utica, Rome and, with one or two small exceptions, Syracuse and Rochester. The Schenectady Railway which, besides giving local service in that city, operates fast through service to Albany and Troy, is controlled jointly with the Delaware & Hudson, each company owning one-half the stock. The Delaware & Hudson owns also the United Traction Company operating the city systems of Albany and Troy and controlling the entrance of the Schenectady Railway into those cities, and the Hudson Valley Railway, running north from Albany and Troy with nearly 100 miles of line. The Mohawk Valley Company owns all or a controlling proportion of the stock of its other trolley companies.

It will be observed by this map that the longest through electric line now owned parallel to the New York Central main line is the Utica & Mohawk Valley Railway's line from Little Falls west to Utica. The West Shore line between Utica and Syracuse, 44 miles, has recently been electrified, thus extending the electric system to Syracuse and making a line from Little Falls to Syracuse, 75 miles, of New York Central auxiliary lines under electric operation. A map of this electrified section of the West Shore is also shown. This

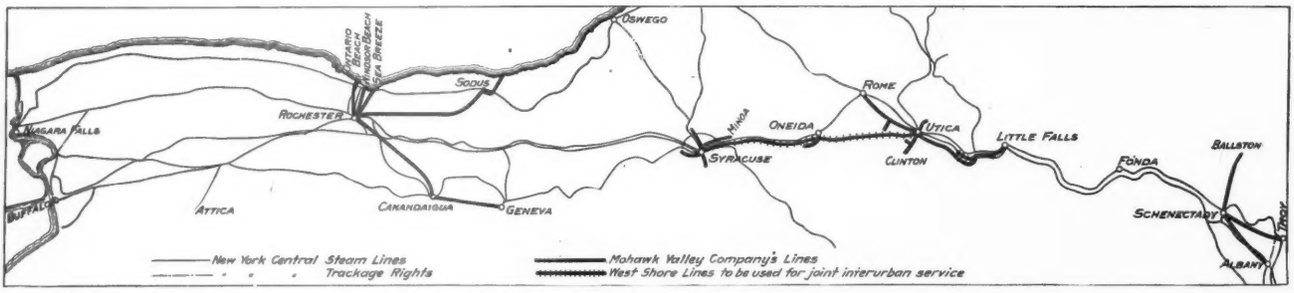
electrification was paid for by the Oneida Railway, which before its purchase was projected to be extended west to Syracuse. The work was done by the Oneida Construction Company. On June 15 this stretch of electrified line was officially opened and regular service over it is now in operation. Besides this, one track on a small section of the West Shore between Mohawk and Frankfort, five miles, was earlier electrified, giving the Utica & Mohawk Valley, which is double tracked all the rest of the way between Little Falls and Utica, a second double track between these points.

The work of electrification of the West Shore for the 44 miles between Utica and Syracuse for joint interurban service was carried out under C. Loomis Allen, Vice-President and General Manager of the Oneida Railway; W. J. Harvie, Electrical Engineer, and M. J. French, Jr., Engineer of Maintenance of Way. An agreement was made with the New York Central under which the Oneida Railway, besides electrifying the line, is to conduct the passenger business over the West Shore between Utica and Syracuse. The New York Central on its part agreed to abandon the local passenger trains on this stretch of track, but will continue to operate freight trains and through passenger trains by steam locomotives. Before electrification there were only two local passenger trains each way a day over this line, the only other passenger trains being two night through trains with sleepers. Yet this is a well populated territory. Besides other smaller places, the three towns of Oneida, Vernon and Canastota traversed have together 17,000 people. Here, then, was a local territory in need of better passenger transportation facilities but whose possibilities of larger traffic were not sufficient to justify increased operation of steam passenger trains. Electric traction offered the advantages of frequent service at small cost per unit. Also an electric line between Utica and Syracuse was needed as part of the Mohawk Valley Company's plan.

There are to be two kinds of electric passenger service over these West Shore tracks. Fast limited electric cars or trains will run hourly between the two cities, making only two other stops. This limited run will be made in 88 minutes for the 44 miles, but 28 minutes of this time will be used within city limits of the terminal cities. There are also to be hourly local cars or trains which are to run at the rate of 24 miles an hour and make the complete run in 118 minutes. These cars will make frequent stops, at every highway if necessary. Besides these two kinds of electric service there will be the regular steam service as at present, except for the steam local passenger trains.

To provide for passing the express trains around the local trains a third track has been laid between Clark's Mills and Vernon, 8½ miles, with cross-over connections to both outside tracks. It will be used by both east-bound and west-bound trains and will be protected by block and interlocking operators at both ends. A fourth track has also been laid between Oneida and Canastota, 5½ miles, where there are water stations and freight yards which might delay the movements of electric trains.

Power for operating the line is bought from the Hudson River Electric Power Company, which has hydraulic power plants at Spiers Falls and Mechanicsville. The transmission line for 60,000 volts is now being extended to Utica, but pending its completion the power company has installed in Utica a temporary steam plant equipped with Curtis turbines and delivering three-phase 60,000-volt current at 40 cycles to the railway. In the 44 miles between Syracuse and Utica there are four sub-stations approximately 10¾ miles apart. Each sub-station contains a 330-k.w., 60,000:370-volt oil-cooled trans-

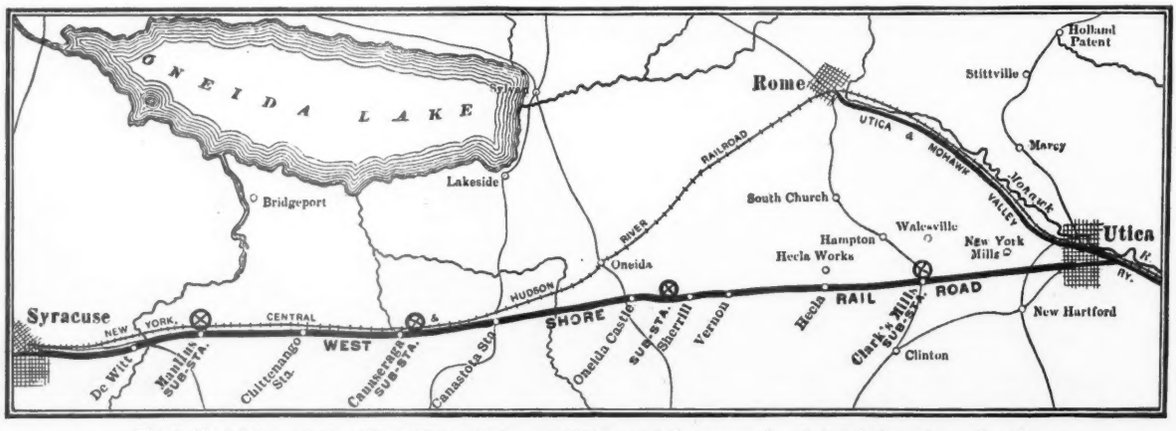


The New York Central's Auxiliary Electric Lines.

former and one 300-k.w., 370-volt a.c. and 600-volt d.c. rotary converter, together with the necessary switches and other accessory apparatus.

The line is built for third-rail operation. The same type of third rail as in the electric zone of the New York Central in the New York terminal territory is used. The third rail is placed 32 in. out from the gage line and the contact surface is 2¾ in. above the top of the track rails. New York Central electric equipment can be run over the line without changing the position of the contact shoe. The third rail is normally located between the tracks on tangents and on the high side of the track on curves.

In order to operate over the street railway lines in both Utica and Syracuse a different type of car was adopted than would have been for the West Shore tracks exclusively. One of the cars is shown herewith. The main dimensions are: Length over end panels, 40 ft.; length over vestibules, 48 ft.; width over sills, 8 ft. 4 in. The underframing consists of two intermediate and two center sills of 6 in. I-beams extending under the vestibules, with malleable iron caps and supports for the main truss rods; which are 1½ in. in diameter. The interior is finished in laid mahogany; the ceilings are full Empire decorated. The floor is covered with interlocking elastic tile, while a rubber mat is furnished for each vesti-



Electrified Line of the West Shore between Utica and Syracuse for Joint Interurban Service.

bule. Storm sashes are furnished for the side windows, which replace window guards in winter. The cars are equipped with 24 reversible and 2 stationary plush seats with high backs and head rolls. Each car is also fitted with a toilet.

The trucks used are Brill No. 27-E2, with a wheelbase of 6 ft. 6 in. The wheel diameter is 37 in. and the axle diameter 5½ in. and 6 in. The wheel tread is 4 in. wide and the depth of the flange is 1 in., to allow the cars to operate over the city systems in Utica and Syracuse. Each car is equipped with four General Electric motors having Sprague-General Electric multiple-unit control, Westinghouse automatic air brakes with graduated release and Peter Smith hot water heaters.

In the extension of the Mohawk Valley Company's electric

service the Falls Road of the New York Central—the second steam line shown on the larger map south of Lake Ontario between Rochester and Niagara Falls—is later to be electrified. Other gaps in the through line will be filled in, either by electrifying one of the existing steam lines or building new parallel electric roads, so that within four or five years the complete plan for an electric line, relieving the through steam line of local passenger traffic, will be in operation all the way between Albany and Buffalo.

The Mohawk Valley Company controls directly 331 miles of electric line, of which 166.6 miles are double track. The electrified

Stretch of West Shore Electrified Three-Track Line.

West Shore lines for joint interurban service make up 49 miles more, a total of 380 miles of line under electric operation. The following table gives the names of the different controlled companies and their mileages in detail:

Table of Mileages.

Name of company.	Miles of line—Single.	Double.	Total.	Miles of track—Total main single track.	Sidings.	Tot'l main tracks & sidings.
Schenectady Railway	10.42	46.37	56.79	103.16	3.65	106.81
Utica & Mohawk Valley...	30.22	38.87	69.09	107.96	3.49	111.45
Rome City Street Ry.....	5.45	0.61	6.07	6.68	.....	6.68
Oneida Railway	1.69	2.77	4.46	7.24	0.10	7.34
Syracuse Rapid Transit Ry	29.38	22.26	51.64	73.90	4.10	78.00
Rochester & East. Rap. Ry	40.60	.....	40.60	40.60	5.00	45.00
Rochester Railway	9.48	38.83	48.31	87.14	1.49	88.63
Rochester & Suburban ...	1.53	8.90	10.43	19.33	0.36	19.69
Rochester & Sodus Bay ..	35.62	3.46	39.08	42.54	2.23	44.77
Rochester Electric Ry.....	0.11	4.55	4.66	9.21	0.15	9.36
Total	164.50	166.63	331.13	497.75	20.57	518.32

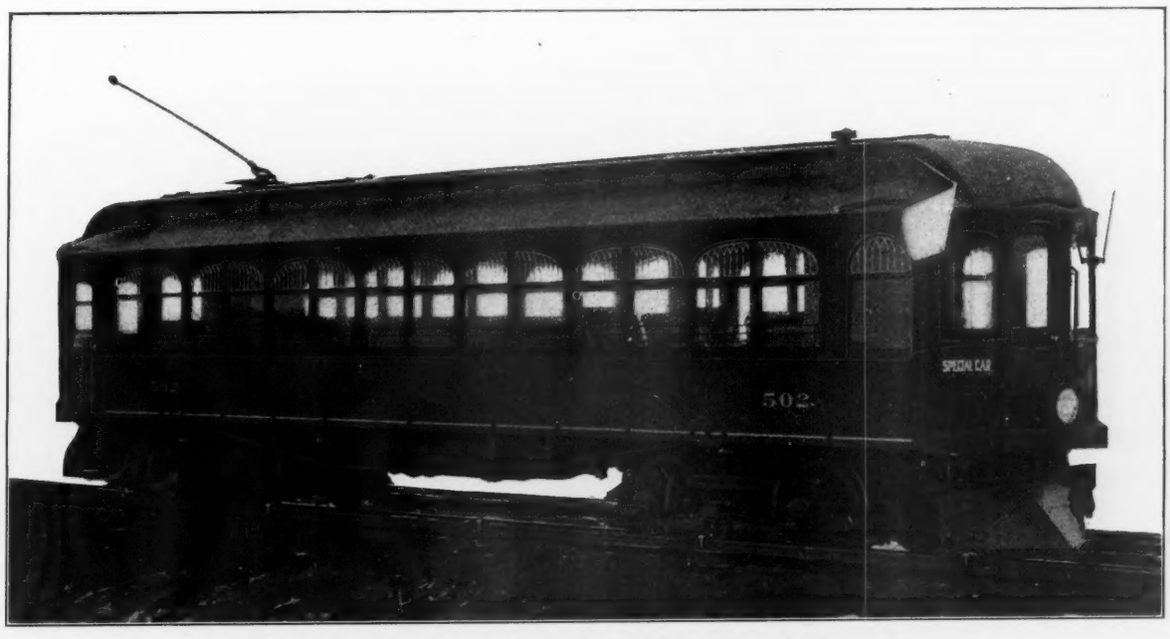
West Shore Interurban Service—Electric Operation

	Tracks—One.	Two.	Three.	Four.	Miles—Of line.	Of single track.	Sidings.	Of total track.
Utica & Mhwk Val.	5.01	.....	.....	.....	5.01	5.01	.....	5.01
Oneida Ry.		30.51	8.84	4.58	43.94	105.89	.....	105.89
Total, including West Sh. Int. Service					380.08*	.....	.....	629.22†

*Miles of line. †Miles of track.

The 10 lines are operated as follows: The Schenectady Railway, of which E. F. Peck is General Manager, and the Rochester & Eastern Rapid Railway, running from Rochester to Geneva, of which J. H. Pardee is General Manager, are each operated separately. The other eight roads are in two groups, the eastern one made up of the Utica & Mohawk Valley, the Syracuse Rapid Transit, the Rome City Street Railway and the Oneida Railway, under C. Loomis Allen, Vice-President and General Manager; and the western group made up of the Rochester Railway, the Rochester & Suburban, the Rochester & Sodus Bay and the Rochester Electric Railway, under R. E. Danforth, Vice-President and General Manager. The different companies maintain their separate corporate organizations. They are not merged in the Mohawk Valley Company, but simply controlled by it.

In acquiring a through line such as that described, it was, of course, most important of all to secure entrance into the large cities. In consequence the entire local street railway systems of Utica, Syracuse and Rochester had to be taken over. This gives an added value, however, to the electric service to outlying points, as passengers arriving by the through lines outside the city can transfer to local cars which will take them direct to their particular destination within the city. Arrangements have already been made for through ticketing over both steam and electric lines. Passengers can now in New York city buy a through ticket over the steam road to the next large city nearest their point of destination and over one of the Mohawk Valley's electric roads to the outlying town where they wish to go. Joint tickets are also now sold in the opposite direction. On such tickets, in either direction, baggage can be checked to or from points on the Mohawk Valley lines, a matter of great convenience. This auxiliary electric service makes outlying towns on the electric lines much more accessible both in through and local service. Thus the paraliel electric lines fulfil a valuable service as feeders and helpers of the steam lines, to the advantage both of the railroad and of the local territory served. The extension and successful carrying out of this idea is the moving force behind the Mohawk Valley Company's plan.



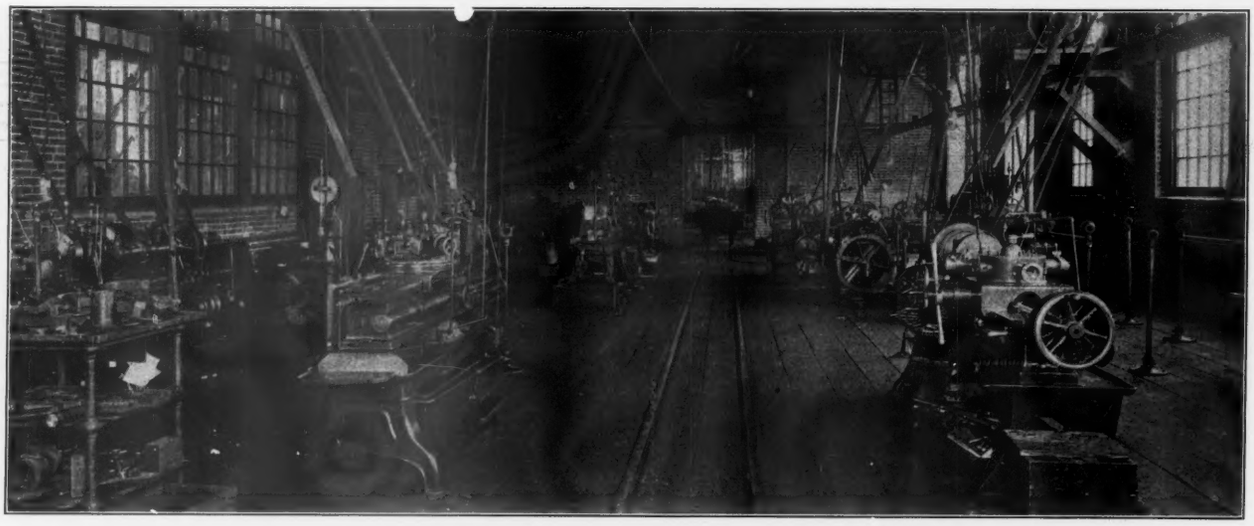
Type of Car for West Shore Electric Interurban Service.

New Blacksmith Shop of the Union Pacific at Omaha.

The new blacksmith shop of the Union Pacific at Omaha, Neb., was designed with particular reference to economical operation. The route of the iron from box cars to storehouse, thence to the shears and through the blacksmith shop, was determined in advance, and the machines located to give the most economical movement. In working up the preliminary designs of this shop, as is customary in the mechanical department of the Union Pacific, W. R. McKeen, Jr., Superintendent of Motive Power, acting as chairman, called together a committee to map out and discuss the methods of doing work in this shop. The committee consisted of the mechanical engineer and some of his draftsmen, the blacksmith shop foreman, assistant superintendent of motive power and superintendent of shops. The general foreman of the car department, general foreman of the machine shop, boiler shop foreman and storekeeper were all called into consultation as the work of their respective departments was discussed. Thus the requirements of all departments were carefully considered. The exact method of handling the iron through the blacksmith shop was decided on at that time.

The proportion of output to size of the shop is believed to equal if not excel any similar shop in existence; also it is thought that there are less hand forges in this shop than in any other in the country. Special use is made of the Bradley hammer, of which

New Blacksmith Shop of the Union Pacific at Omaha.



The Bolt Shop; an Annex to the Blacksmith Shop.

Bradley Hammers Working on Store Orders; Union Pacific Blacksmith Shop.

Frame Fire and Foreman's Office.
Tram track at left is for moving heavy repaired forgings.

Union Pacific Blacksmith Shop at Omaha.
Material cars serving machines, in foreground.

there is a battery of five on car work. Work on track tools, etc., is done with economy. The hand forges are grouped, with steam hammers working in conjunction with each group, thus facilitating the work of hand forging and decreasing helping labor. By the use of mechanical forging machines, bulldozers and other modern iron-working tools, material can be turned out much more cheaply than before.

One source of great economy has been the systematizing of work so that parts for cars and locomotives are carried through the blacksmith shop on store orders, the parts being made in large numbers and carried in stock, instead of manufactured by hand, one at a time, as formerly. All of the furnaces use crude oil for fuel. The large furnaces are equipped with modern water-tube boilers, which not only furnish steam for running the steam hammers and heating the buildings, but supply considerable steam for the power plant.

It is the policy to provide the most healthful possible conditions for employees. To that end the Sturtevant system for carrying off smoke from the forges and furnaces has been installed in the blacksmith shop; also a lantern in the top of the building for ventilation in the summer, and the suction or exhaust system of ventilation in the roof for relieving the inside of the shop of any smoke which may escape from the other system. With this triple system of ventilation the atmosphere is always clear and agreeable.

The drop-forging department has been developed to a wonderful extent and a great many locomotive parts which for years have been made by hand are now made under the drop hammers much more cheaply. The method of working up the scrap and of forging old axles and heavy iron by the regular furnace or hammer gangs is a great economy.

In connection with the blacksmith shop is the nut, bolt and stud machinery in an annex to the shop, where all threaded articles are manufactured. This bolt shop, which is shown in one of the photographs, is equipped with bolt cutters, nut tappers, screw-cutting machines, stud machines, staybolt drills, etc., and delivers the finished product from the blacksmith shop direct to the storehouse.

Material is conveyed from the iron house to the different machines on 24-in. gage push cars. From a machine it passes to a second push car, and so on, being handled through the shop without touching the ground. The cars are moved in trains by a storage-battery truck.

The foreman of the Omaha blacksmith shop is R. A. Mould. He has an assistant and a clerk.

Progress on the Western End of the St. Paul's Pacific Extension.

The route of the western end of the Pacific coast extension of the Chicago, Milwaukee & St. Paul from Butte, Mont., to Missoula, parallels in a general way the existing main line of the Northern Pacific. From Missoula the route parallels the Coeur d'Alene branch of the Northern Pacific to a point near St. Regis, Mont., where it turns southward and crosses the Bitter Root mountains through a new and hitherto almost unknown pass. The work in this district is in charge of Winston Brothers Company of Minneapolis. This firm has the contract for a big tunnel west of St. Regis. Very little active construction has taken place. The work now being done consists mainly of preparation and organization. Active work on the big tunnel will begin shortly.

From the Bitter Root tunnel to Tekoa, Wash., the new line follows the valley of the St. Joseph river, crossing the south end of Lake Coeur d'Alene near Chatcolet and paralleling the operated line of the Oregon Railroad & Navigation to Tekoa. This stretch has a light, water grade, with heavy rock cuts and fills necessary along the bluffs and cliffs of the river. This division is being built by H. C. Henry, of Seattle, Wash., who is general contractor for all of the line west of the Bitter Roots. At present it is largely in the initial stages of organization. The engineers are busy cross-sectioning, while the contractors are clearing the right-of-way and getting ready for active construction. At the same time most of the heavy cuts have been opened and station men are at work on the light grading. No bridge work has been done. This is probably the least completed section of the new line.

The construction from Tekoa, Wash., to Ellensburg is in a more advanced state. The general route is from Tekoa directly southwest through Whitman and Adams counties, crossing the Northern Pacific at Lind, Wash. Thence the line goes southwest to the village of Othello in the southwestern corner of Adams county; then follows Crab creek to the Columbia river. From the Columbia river crossing to Ellensburg the general direction is northwest through the Poisoned Spring district. Several townsites in this district, in Adams and Douglass counties, have been platted and will shortly be on the market. The region is literally covered with contractors and the work is well under way; most of it has advanced beyond the line-changing stage. Considerable progress has been made on bridges.

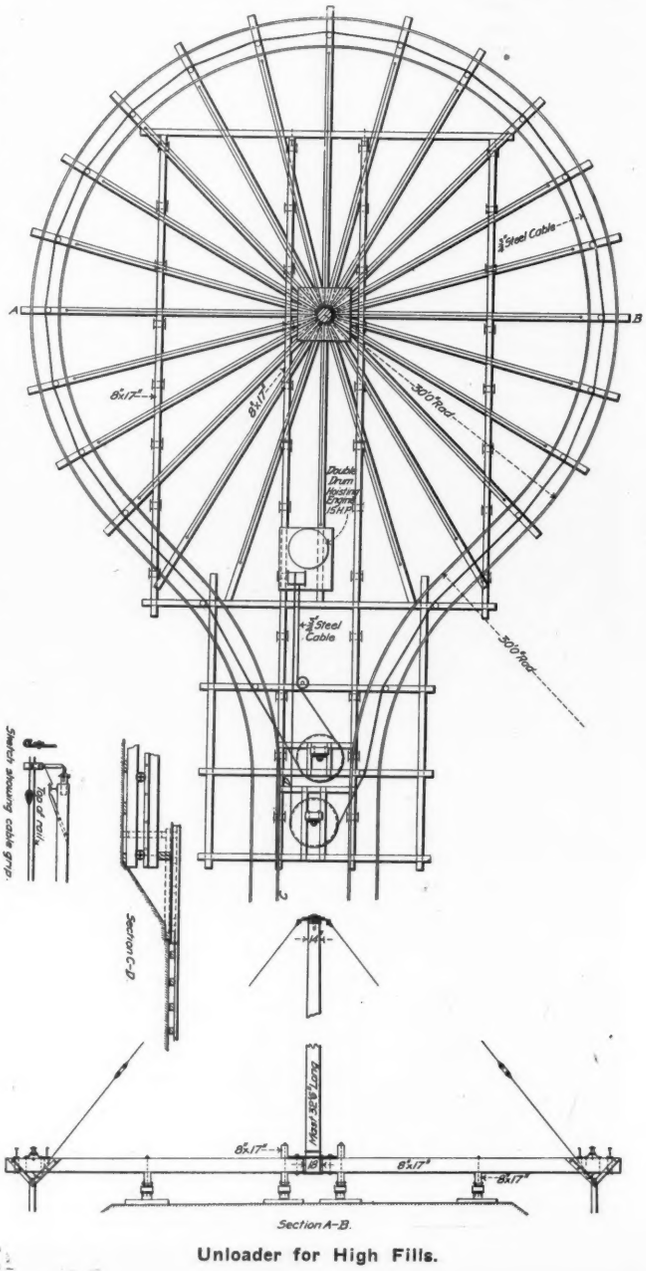
From Ellensburg, Wash., to the Cascade mountains the line parallels the Northern Pacific. A great deal of grade has been finished between Ellensburg and Easton, but there yet remains several months' work on the heaviest cuts and fills. The line crosses the Cascades through a long tunnel under Snoqualmie Pass at the north end of Lake Kilchelos and goes down the west slope through the North Bend region. Near the tunnel the work is in its first stages; in some sections the right-of-way clearing has just been begun. West of North Bend construction is much further advanced; miles of grade and considerable bridge work have been finished. This district will be the first to be ready for track laying. Between Seattle and Tacoma the grade is half completed but no bridge work has been done. No work has been done on either the Seattle or Tacoma terminals.

In general, the line has been finally located, and throughout the whole stretch from Butte to Seattle actual construction has begun. Some sections will shortly be ready for the track, but it will be at least 18 months before many parts of the heavy solid-rock work is finished.

An Unloader for High Fills.

The E. B. & A. L. Stone Company, of Oakland, Cal., is one of the contractors who are building the Western Pacific Railway. It has been necessary for them to make a number of high fills, and to expedite these a machine has been designed which is shown at work in the accompanying photographs and in detail in the accompanying drawing.

The machine consists of a circular track supported on 8 in. x



Unloader for High Fills.

17 in. radials, with the additional support of rods suspended from a mast. A cable, which is held in place by rollers, leads around between the rails. A train of contractors' cars loaded with earth is hauled around this circular track by the cable, which is operated by a donkey engine located on the machine, as shown. While the cars are being pulled around, the locomotive engine switches from the delivering to the receiving track. As the cars are unloaded while in motion, the empty train is in place by the time the engine has made the switch. The cars can be dumped inward or outward at any point on the machine.

When sufficient earth has been dumped, the unloader is moved forward 10 ft., a process which requires about an hour or an hour and a half. This is generally done at noon or in the early evening. The base of the unloader is carried about 4 ft. below grade, and the fill is brought up to grade at the back end as the machine is moved forward. Four stringers 16 ft. long are attached to the machine and are dragged forward when it is moved ahead. Rail sections 10 ft. long are used to fill in the space behind, resting on these stringers. The first trainload of dirt, after the machine has been moved, is used to fill in the open space behind over which the stringers stretch. While filling, the settlement is taken care of by raising the machine with jacks and blocking up. This requires one carpenter and two laborers continually. Five men on top of the machine, including the man who runs the donkey engine, attend to the dumping of the cars and chaining up. The timbers and iron of the machine are of such lengths that they can be loaded on an ordinary flat car. The machine is all bolted together and can be taken apart by a small gang of men in two days.

High Fill on Line of Western Pacific; Unloader at Work.

Unloader Used on High Fills; by E. B. & A. L. Stone Co.; Western Pacific.

This unloader has for the past four months been in use on a 112-ft. fill near Altamont, Cal., working day and night. Previous to that it was successfully used on a 125-ft. fill, now completed. It has not yet been possible to determine the number of cars that can be handled, as a 70-ton Bucyrus steam shovel in good digging has not been able to keep the unloaded busy more than half the time. The machine was designed for the special purpose of making high fills by F. F. Lloyd, who is connected with the E. B. & A. L. Stone Company.

The Mt. Blanc Tunnel.

According to the *Revue Industrielle* the construction of a tunnel under Mt. Blanc is needed in order to place the French railroads on an equality with those of Germany in the transportation of passengers and freight between the north and Italy. The recent completion of the Simplon tunnel and the approaching opening of the Loetschberg has placed France in a very unfavorable position, commercially, in comparison with Belgium and Germany. Communication between France and Italy is limited to two lines: those of the Littoral and Mt. Cemis, and it is for the purpose of protecting the railroad interests of the country that the Mt. Blanc tunnel is required. By means of this route Paris and Dijon will be in direct communication with Milan and Genoa, and the whole commercial, industrial and agricultural territory of the basin of the Loire and the Saone will be able to ship direct to the two great commercial centers of Italy.

It appears that this Mt. Blanc proposition is not a new one, but even preceded the creation of the railroad system, for as early as 1836 M. Vaguer proposed a route from Courmayeur to Chamounix by way of a gallery beneath Mt. Blanc. Eight years later, in 1844, the idea was revived by an advocate, M. Martinet, and an engineer, M. Alby. In 1846 it was discussed by the Casuel canton and in 1862 by the canton of Gorret. Again in 1870, 1873 and 1879 the project was discussed and abandoned because of the hostility of rival interests. The route now proposed starts from Chamounix and shortly afterwards enters a tunnel 13,500 meters (44,280 ft.) long beneath the crest of the mountain, which runs to Courmayeur. This is really the only logical route. In fact, the dominant question is that of driving the tunnel, for after leaving the tunnel there is a choice of approaches.

The Mt. Blanc Railway will be built half on French and half on Italian territory. It is expected that Italy, which contributed so largely to the construction of the St. Gotthard and the Simplon, will not refuse its assistance to the Mt. Blanc, especially as this last will be of such great importance to it.

Passenger Locomotive for the Duchy of Oldenburg Railroads.

The Hannoversche Machinenbau-Actien-Gesellschaft of Hanover, Germany, has recently celebrated, with festivities appropriate to the occasion, the delivery of the 5,000th locomotive built by these works. On that occasion there were present representatives of the governments of the towns of Hanover and Linden and other public authorities of numerous administrations of German and foreign railroads, as well as representatives of neighboring industrial firms.

These works were brought prominently before the American public ten or a dozen years ago, in that they were largely instrumental in the construction and development of the compound locomotive as designed by the late August von Borries, who was at that time the head of the locomotive department of the State Railroads of Hanover. They were founded in 1835 by Georg Egestorff, who was succeeded by the present firm. It was not, however, until 1846 that the first locomotive was delivered, and it was ten years later before 100 had been built. The 500th was built in 1870; the 1,000th in 1873; the 2,000th in 1888; the 3,000th in 1897, and the 4,000th in 1903. Of the 5,000 locomotives built up to the present time, about 1,100 were built for roads outside of Germany, and of these by far the larger number were sent to Russia. Deliveries have also been made to Roumania, Japan, Java, Denmark, Turkey, India, Austria, Portugal, Italy, Bulgaria, Holland, China, Siam, Finland, Argentine, Sweden, Greece and Chili; so that the firm is widely known not only because of its connection with important works but from the wide territory over which its engines are running.

The locomotive that is the subject of this sketch has been built for the railroads of the Grand Duchy of Oldenburg. It is of the 4-4-0 type with a bogie in front, and is of the standard type used on the State Railroads of Prussia. It is a two-cylinder compound with cylinders having a ratio of 1 to 2.25. In connection with these, the Lindner starting device is used, by which live steam is allowed to enter the low-pressure cylinder when the reverse lever is at either one of the extreme positions. Staby's smoke consuming device is also used and the second dome on the boiler is the one from which steam is drawn for the working of the apparatus. Again, in accordance with the prevailing practice upon the Prussian State Railroads, a superheater is used. It is of the Ranafier smokebox type and is formed by the sub-division of the receiver into 46 seamless iron tubes of 1⅝ in. diameter each,

and so arranged as to act as a spark arrester at the same time. The heating surface of these tubes is 154 sq. ft. measured upon the outside, and their capacity is 1.75 times the volume of the high-pressure cylinder. Six express locomotives have, thus far, been fitted with this type of superheater on the railroads of the Grand Duchy of Oldenburg, and it will be placed on 11 more now in course of construction.

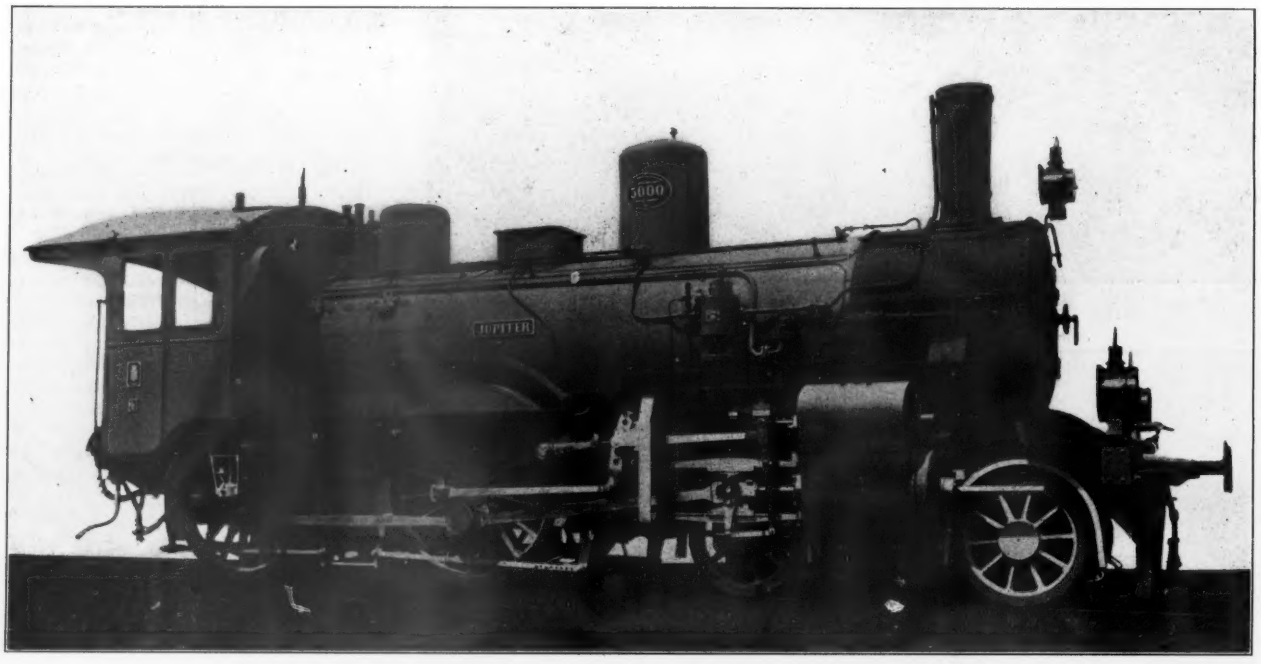
As compared with the engines to which American eyes are accustomed this one appears low. Its design is distinctively German and the peculiarities of the arrangement of certain of the parts in detail are such that they would attract immediate attention. For example, the exhaust from the Westinghouse brake pump is carried up outside the boiler jacketing and the stack. This arrangement has been used to but a limited extent in this country, probably because of the unsightliness of the pipe, though it does possess the advantage of not fanning the fire when the engine is standing. In addition to this it is quite probable, though there are no figures at hand to support the statement that the interposition of this extra exhaust into the stack must interfere with the efficiency of the main exhaust by introducing eddies in the steam jet that interfere with its proper action.

The Walschaert valve gear is arranged for an outside admission, and with the radius rod lifted direct by the lifting shaft arm instead of through a hanger as in the usual practice in the United States.

practice of covering the bolts, and the saving of heat by radiation losses also puts the base sheets out of the running. These are a few of the items that are deserving of attention and consideration in this design. Some might well be copied while others do not appear to be as efficient or simple as similar details that are to be found in American engines.

The following are some of the principal dimensions of this engine, and in these attention is called to the large proportion of the total weight that is upon the trucks:

Cylinder, diameter, high-pressure	18 in.
Cylinder, diameter, low pressure	27 "
Piston stroke	23½ "
Wheels, diameter, driving	69 "
Wheels, diameter, truck	40 "
Wheel base, truck	7 ft. 3 "
" rigid	8 " 6½ "
" total	24 " 3 "
Heating surface, tubes (fire side)	1,188.0 sq. ft.
" " firebox	96.7 "
" " total	1,284.7 "
" " superheater	154.0 "
Grate area	24.6 "
Tubes, number	231
" diameter (outside)	1¾ in.
" length	12 ft. 9½ in.
Diameter boiler shell	55 "
Steam pressure	176 lbs.
Weight empty	47 tons
" on drivers	28 tons 10 cwt.
" in working order	51 tons 7 cwt.
Center of boiler above rails	7 ft. 4½ in.
Tank capacity (water)	4,400 gals.
Tractive power	12,950 lbs.



Passenger Locomotive for the Railroads of the Grand Duchy of Oldenburg.

No brakes are put on the truck wheels, but the drivers are fitted with two shoes for each wheel. This is a practice that was strongly urged in this country at one time, but which has not received an extensive application except on a single road. The advantages claimed for the arrangement are that it relieves the boxes and rods of all strain due to brake pressures; that it secures a more uniform wear on the wheels and can be made much lighter than where the pull is all in one direction. In the case of these German engines a double connection is used, a rod running on each side of the wheels, with vertical equalizers below each brake lever so that with the exception of the use of horizontal equalizers and a single pull rod on the engines in America, the principle underlying the foundation rigging of this brake is the same as that of the Beals brake that has been used for so many years on the New York, Ontario & Western Railroad. The double shoe is also used on the tender wheels of these engines.

It will be noticed, in the reproduction of the photograph, that the staybolts of the firebox apparently come through the lagging and jacketing. Of course this is not the case but those markings are thimbles that are placed through the covering at each staybolt, making it possible not only to inspect each staybolt but to remove and replace any one of them without disturbing the jacketing in any way. This is not an uncommon requirement in Europe but is quite unknown to American practice. The advantages are apparent upon first sight and the only disadvantage lies in the additional first cost, but this would be met in part at least by the first occasion that should arise necessitating the renewal of a staybolt. As for the safety thus insured there can be no comparison with the

$$\frac{\text{Weight on drivers}}{\text{Tractive power}} = 4.93$$

$$\frac{\text{Total weight}}{\text{Tractive power}} = 8.88$$

$$\frac{\text{Weight on drivers}}{\text{Total weight}} = .555$$

$$\frac{\text{Tractive power x diameter drivers}}{\text{Heating surface}} = 693.97$$

$$\frac{\text{Heating surface}}{\text{Grate area}} = 52.26$$

$$\frac{\text{Firebox heating surface}}{\text{Total heating surface}} = .0753$$

$$\frac{\text{Weight on drivers}}{\text{Total heating surface}} = 49.70$$

$$\frac{\text{Total weight}}{\text{Total heating surface}} = 89.53$$

$$\frac{\text{Volume of h. p. cylinder} = 3.46 \text{ cu. ft.}}{\text{Total heating surface}} = 185.65$$

$$\frac{\text{2 x volume of h. p. cylinder}}{\text{Grate area}} = 3.55$$

$$\text{Volume of h.p. cylinders}$$

Tube heating surface equated to firebox heating surface (Vaughan's formula) ..... 332.77 sq. ft.
Total equated firebox heating surface ..... 429.47 "
Ratio, equated heating surface to total heating surf. 33.43 per ct.

GENERAL NEWS SECTION

NOTES.

Three thousand Japanese laborers are being brought to British Columbia for the Grand Trunk Pacific.

In Ohio it is reported that both the New York Central and the Pennsylvania are making reductions in the forces of their men in their city freight soliciting offices.

The Electric Express Co. has been organized at Boston to do the express business on the electric city and interurban railroads controlled by the New York, New Haven & Hartford.

Vice-President Fay, of the Southern Pacific, expects to have the whole of that company's line from New Orleans, La., to Houston, Tex., equipped with automatic block signals within three months.

The Department of Agriculture on July 15 sent to the Department of Justice 41 cases on which to bring suit against railroads for keeping live stock in cars beyond the legal length of time.

The new State Railroad Commission of Montana has held a meeting and declared that the freight and passenger rates now in force shall be deemed the maximum lawful rates, except as regards coal on the Great Northern and lumber on the Northern Pacific. The rates on these commodities will be considered by the commission.

The Supreme Court of Georgia has sustained the right of the State Railroad Commission to prescribe through rates over the lines of the Central of Georgia and the Wadley Southern the same as though both roads belonged to the same company, the commission having found that the Wadley Southern is controlled by the Central of Georgia.

The Governor of Wisconsin has signed a bill making an eight-hour day for telegraphers, and one to prevent watering stocks. The new law requires public service corporations to get permission from the State Railroad Commission before issuing any stock or bonds and prohibits selling stock for less than par or bonds for less than 75 per cent. of par.

At El Paso, Tex., recently 30 employees in the freight yard of the Galveston, Harrisburg & San Antonio were discharged for having struck, and the dismissals are sanctioned by the union to which the men belonged because they took action without first reporting their grievance to the union headquarters. The cause of the strike was the dismissal of a yardmaster.

In the United States Court at Chicago last week the Atchison, Topeka & Santa Fe was indicted on a charge of granting rebates aggregating $12,000 to the United States Sugar & Land Co., of Garden City, Kan. The indictment contains 65 counts, all having to do with shipments of building material carried by the road when the sugar company was building its refinery.

Surprise tests of enginemen appear to be growing in favor, and the fashion of giving the results of the tests to the public also seems to be spreading. The latest aspirant for public notice is the Lehigh Valley, on which road a number of tests were made on April 12 and 27, May 1, 9 and 23, and June 7, 10 and 14, all the tests showing complete obedience to the rules.

By vacation of a stay order last week in a preliminary injunction issued a year ago 54 ticket scalpers in Chicago are compelled to quit business or fight their way in court against 17 complaining railroads, assuming the burden of proof as to the legality of their business. This issue is involved in a case before the United States Supreme Court, but a decision is not expected for a year.

The State Railroad Commission of Wisconsin has ordered that the grain elevators at Superior owned by the railroads be opened for the use of the general public at reasonable rates. The grain dealers have long wanted this privilege because of an expected advantage in having grain inspected under the law of Wisconsin instead of under the law of Minnesota as is necessary at Duluth, across the river.

A. F. Dillinger, reporting on the condition of the Canadian Northern after the tie-up of that road last April, tells the Canadian Railway Commission that the causes of the breakdown were lack of motive power and cars and of roundhouses and repair shops; the severity of the winter; want of proper apparatus to keep tracks clear of snow, and complete absence of systematic organization. The report recommends that 15 snow plows and 10 flangers be purchased, that five more roundhouses and five more repair shops be built in the West, and that the company adopt a systematic organization.

The Interstate Commerce Commission announces that a final hearing on the proposed uniform bill of lading will be held October 15. A joint committee of representatives of the carriers and shippers has reported to the Commission that practically all of the carriers in the official classification territory and the original petitioners have agreed to the proposed form of bill of lading submitted to the Commission, and have requested the Commission to approve and prescribe that form.

The Canadian Railroad Commission has ordered that the trunk lines of that country cease discriminating against Windsor and other points in western Ontario in favor of Detroit and other points west of the St. Clair river. The rates from Detroit and Port Huron to eastern cities must be the maximum rates from Windsor and other points in that region. An order with a similar purpose is issued in regard to rates from points in Ontario near Niagara which it is declared have been too high as compared with rates from Buffalo.

The Pennsylvania Railroad has issued revised rules for handling explosive and inflammable freight. The large yellow label which must be put on boxes, barrels, etc., does not read "*Dangerous*," etc., but has been changed to, "Notice to Pennsylvania Railroad employees. CAUTION. This package must be carefully handled," etc. The words at the end of the old notice, "Fire or other danger or loss may result if these directions are not followed," have been omitted at the request of a large number of shippers, who were troubled by some consignees being afraid to accept goods which they deemed so dangerous.

Judge Thomas G. Jones, in the United States Circuit Court at Montgomery, Ala., July 13, declared unconstitutional the law recently passed in Alabama intended to prevent railroads from going to the United States courts when sued by the state for non-compliance with its law. According to the law in question, the mere act of beginning a suit in the Federal Court would work the abrogation of the license of the road to do business in Alabama. Judge Jones holds that such legislation violates the contract made between the state and the corporation, and therefore is invalid under both the state and the United States constitutions.

The terms of the agreement between the New York Central & Hudson River and the New York, New Haven & Hartford, as to the New Haven's purchase from the New York Central of electric current to be used between Wakefield and Grand Central Station, were settled some time ago. A memorandum to that effect was initialed by the presidents of the respective companies some time before the daily newspapers began a series of stories of the progress of the negotiations and the difficulties and disagreements, with general suggestions that these were responsible for the delay of the New Haven in using electric power to reach Grand Central Station. The price to be paid has not been made public, but the basis for the terms was the cost of production, together with the proper allowance for interest and depreciation on the New York Central plants.

Two Cents a Mile in Wisconsin.

The people of Wisconsin appear to have taken a second thought on the question of passenger fares in that state and to have rescinded what was supposed to be their approval of the decision of the State Railroad Commission when it held that 2½ cents a mile was a proper maximum on the principal railroads of the State. The legislature has now passed a law, which has been signed by the Governor, limiting all fares to 2 cents a mile on every railroad having yearly gross receipts of $3,500 a mile.

Rock Island Employees' Magazine.

Publication of a magazine for employees of the Chicago, Rock Island & Pacific has been begun. It will be issued the latter part of each month, and it is intended that every person on the Rock Island payroll shall receive it regularly, free of cost. The first number contains an announcement by President Winchell, of the Rock Island Lines, beginning with a statement substantially as above, and explaining the scope and objects of the publication. The magazine is to be a 64-page publication beginning with No. 3, by which time it is expected to have it fully organized. The current number contains 16 pages and No. 2 will have 32 pages. It will also have a suitable cover design, to be chosen from drawings which the employee readers have been asked to submit. The first issue contains some good reading,

giving promise of a publication of real value and excellence when the full purpose, as set forth by the president, has been incorporated into its columns. The editor and manager is H. E. Reisman, 323 La Salle Street Station, Chicago.

Canadian Fire Precaution Rules.

The Dominion Railway Commission has issued new regulations to govern all Canadian roads in protection against fires. There must be a fire extinguisher at each end of each passenger coach, of a pattern approved by the board, under penalty of $25. A watchman must be provided for every 2½ miles of track, or, if furnished with a track bicycle, for each five miles of track. A barrel of water must be provided at every trestle and one at every 100 ft. Companies are required to keep the whole width of the right of way near any trestle free from brush. The use of lignite coal is prohibited.

A New Paulus Track Drill.

The Buda Foundry & Manufacturing Co., Chicago, has produced a new style of Paulus track drill, which is illustrated herewith. It is much like the older style but has a number of improvements. These are briefly as follows:

The frame, which can collapse backwards to allow trains to pass without disturbing the setting of the drill, is heavier and stronger than before, being of T section, which secures comparative lightness with greater stability, and makes it possible to do heavy work without racking the frame. The variable-feed arrangement shown in Fig. 2 is simple. The pawl which operates the feed-screw ratchet wheel is actuated by a rocker shaft. This rocker shaft is kept in motion by the eccentric which revolves with the spindle. The arm that rests on the eccentric has a small roller bearing which relieves friction and wear. Over the feed-screw ratchet wheel is a small semi-circular shield which is slotted at the end hid from view and held in position by the thumbscrew at the side of the base. When in the position shown, the pawl slides along the top of the shield and drops into only one notch, but if the shield is allowed to slip back, the pawl will drop into the notches sooner and thus give a feed of one, two or three notches as desired. The ball-bearing thrust is placed between the feed screw and the spindle and is dust proof.

Another feature is the simple arrangement to feed the bit up to the work and return it quickly. This is done by a small crank handle at the rear of the frame. The spindle does not revolve while being moved to or from the rail. By the adjustable-handle arrangement, while using large bits with heavy feed in hard rail, a greater leverage can be obtained by the operator. When smaller bits are used with lighter feeds it is more desirable to have the handles shortened up, thus giving greater speed. The gearing has been changed, as compared with the former design, so that the work of the operator is lightened.

While either twist or flat bits may be used, the drill is shown equipped with the Rich spindle and chuck, and Rich flat high-speed steel bit. The makers claim that the flat bits will drill 10 to 15 times as many holes as other kinds before requiring to be re-sharpened. Also there is double the usable steel. The chuck is designed to permit only enough of the bit to project to penetrate the work, thus increasing the torsional strength.

Fig. 1—New Style Paulus Track Drill.

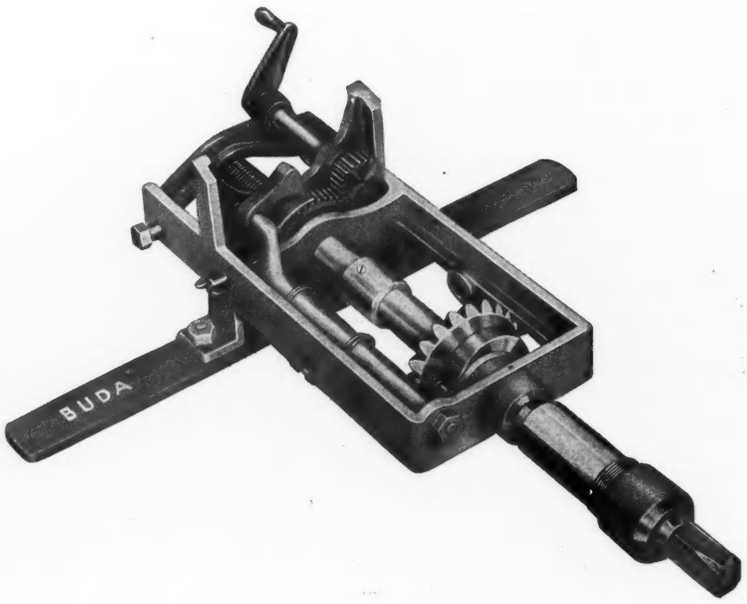


Fig. 2—Detail View of Base; New Paulus Drill.

Progress on the St. Paul Extension.

The point at which the St. Paul's Pacific extension crosses the Missouri river has been named Mobridge. Work is under way on the bridge but slow progress has been made as the temporary bridge has been washed away three times since the breaking up of the ice last spring, the last time by an unusually heavy June rise. The bridge is being built with caissons of which as yet only one has been sunk. The stone work on this pier is up to the water line. The new line west of the river is nearly finished to the point where it crosses into North Dakota at the northeast corner of Butte county, South Dakota. See article on page 72 covering progress on the western end.

Reduced Passenger Fares in the West.

The substance of the fragmentary unofficial statements given to the newspapers in Chicago concerning changes in passenger rates appears to be that between Chicago and the Rocky Mountain states rates on the principal roads, both interstate and intrastate, are to be put on the basis of 2 cents a mile as soon as the tariffs can be prepared; and that east of Chicago a similar change is contemplated but will not be made for two or three months yet. West of Chicago a 2,000-mile interchangeable book is to be sold at $40 and the mileage bureau will be abolished. East of Chicago the 1,000-mile book at $25, good only for the purchaser, with a rebate of $5, will be continued.

Doing Away With the Call Boy.

It is announced at Altoona, Pa., that the enginemen, firemen and trainmen of the Pennsylvania living in that city are to have telephones put into their houses at the expense of the railroad company so that they can, by that means, be called when they are wanted for duty, thus putting the time-honored peripatetic caller out of business.

The Stickney Tract.

Railroads centering in Chicago find it impracticable to utilize the joint car clearing yard, established 15 years ago by H. H. Porter and his friends on what is known as the Stickney tract, at a cost of $5,000,000, with accommodations for 5,000 cars. The yards have been idle for several years. About six months ago a movement was started to give them another thorough trial and the formulation of a plan was entrusted to a committee, but it has done

nothing. The yards are inaccessible and the expense involved in their use prohibitive and the project can be considered dead. Miles of 80-lb. steel rails are becoming streaks of rust, buildings are going into decay and a big investment is yielding no returns.—*Press Despatch.*

INTERSTATE COMMERCE COMMISSION RULINGS.

The Commission has postponed to October 11 all further action on the question of posting tariffs in stations. On that date a hearing will be held at Washington; and the order made June 10, designed to secure a better compliance with the law requiring the posting of two tariffs in every station, is temporarily suspended.

Wheat Rate from Oklahoma to Texas Reduced.

In an opinion by Commissioner Prouty decision has been announced in the case of W. O. Mitchell v. Atchison, Topeka & Santa Fe and others. The complainant, a resident of Oklahoma City, Okla., and a shipper of wheat, alleged that the rates charged by defendants for transportation of that commodity from Oklahoma City to Gainesville and Fort Worth, Tex., are excessive. The short-line distances are 140 miles to Gainesville and 202 miles to Fort Worth, and the rate in both cases was at the date of the hearing 28½ cents per 100 lbs. The Commission held that this rate on wheat is unreasonable, and required defendants to establish in lieu thereof a rate of 20 cents to Gainesville and of 22 cents to Fort Worth.

Estimated and Actual Weights of Shipments.

In an opinion by Commissioner Lane, the case of W. N. White & Co. v. Baltimore & Ohio Southwestern and Baltimore & Ohio, is decided. The complaint alleged that defendants' carload rate on apples from certain points in Illinois to New York City was unreasonable in that an arbitrary weight greater than the actual weight was imposed. Subsequently the railroads amended their tariffs so as to make them apply only to actual weight on such apples. On this showing the complaint was dismissed. In this decision the Commission said that it has recognized the right of carriers, in order to facilitate the movement of business, to fix an estimated weight on certain standard packages on which a rate is based. This estimated weight is taken into consideration in making the rate itself, and of such estimated weights shippers have the right to complain before the Commission and secure relief. But the facts in this case did not justify a finding that the estimated weight complained of was a violation of the Rate Law, therefore the claim for reparation is denied.

Rates on Staves Through East St. Louis Upheld.

In an opinion by Commissioner Lane the Commission has announced decision in the case of Omaha Cooperage Company v. Nashville, Chattanooga & St. Louis and others. Rates on oak staves and headings from Hollow Rock, Tenn., to East St. Louis when destined to South Omaha were claimed to be unreasonable compared with the rates from the same points of origin to East St. Louis when destined for Alexandria, Mo., or Keokuk, Iowa. The South Omaha rate is a combination of the 14-cent rate of the N., C. & St. L. and Illinois Central plus the "local" rate of 10 cents of the C., B. & Q., whereas the Keokuk or Alexandria rate is a joint rate of 19 cents, 14 cents to the two first carriers and 5 cents to the C., B. & Q. The complainant made no complaint against the C., B. & Q. rate. It appears that some years ago the division gave the C., B. & Q. its full "local" from East St. Louis to Keokuk or Alexandria, and the two eastern carriers 2 cents less than their joint rate to East St. Louis; but the division as now made gives these two roads the same earnings on cooperage products carried from Tennessee points to East St. Louis, whether destined to South Omaha, Alexandria or Keokuk. The complaint is dismissed.

Embargoes Against Individuals Unlawful.

The Interstate Commerce Commission has announced decision, in an opinion by Commissioner Lane, in the case of E. L. Rogers & Co. v. Philadelphia & Reading. It appeared that in July, 1906, defendant issued a special embargo on complainant's shipments of hay and straw destined to the Reading's 23d and Arch streets station in Philadelphia. The Commission holds that such embargo was an unlawful discrimination. Whatever may be said of an embargo against one commodity only in a time of congestion, nothing can be said for an embargo which refuses transportation facilities to some establishments while according such facilities to their competitors. If the exercise of such a power were to be at all tolerated, carriers would be able to issue sentence of commercial death against some of their patrons, while continuing to serve others. The Commission also holds that it has jurisdiction to forbid such discrimination and to award reparation for the detriment directly and proximately resulting from it, but as the record in the case fails to show that the shipments made during the embargo period were interstate, no order of reparation is entered, and complainant's claim for reparation for general injury to its business is not sustained by the testimony.

Railroad Ordered to Make Through Route and Rate With Steamship Company May Secure Itself.

The Commission, in an opinion by Commissioner Prouty, has announced decision in the case of the Enterprise Transportation Co. v. Pennsylvania Railroad and New England Navigation Company. The purpose of the proceeding was to compel the Pennsylvania to make a through route and joint rate with the complainant from Jamestown, Rhode Island, to Philadelphia, Pa., for transportation of fish.

The Commission holds that no satisfactory through route exists from Jamestown to Philadelphia within the meaning of the language of the Rate Law. Even if the present arrangement should be regarded as a satisfactory through route, complainant's right to maintain this proceeding would not be affected thereby, since, at the time the complaint was filed, through route from Jamestown by defendants' lines had been abandoned and for a time thereafter was not in operation.

The Commission ordered the Pennsylvania and the complainant to establish, for the transportation of fish, from Jamestown to Philadelphia, a through route, and apply thereto a joint rate of not more than 34 cents per 100 lbs., except that the Pennsylvania may, if it wishes to do so, apply to the Commission for an order requiring complainant to indemnify it against any loss it may suffer in the premises by reason of the financial irresponsibility of complainant.

Connections with Industrial Road Must Be Made; Divided Opinion of the Commission.

The Interstate Commerce Commisson, in an opinion by Commissioner Prouty, has announced decision in the case of McRae Terminal Railway v. Southern Railway and Seaboard Air Line. The complainant, owning a railroad about one mile long, from a point near the Southern in McRae, Ga., to a point near the Seaboard Air Line, alleged that these roads decline to make with it physical connections at its termini. The Commission holds that as such connections are practicable, can be made without hazard to the public, and the complainant's prospective business is sufficient to justify the connections, the defendants should give complainant the physical connections asked for, but they should be made at the expense of complainant. Definite order is withheld pending action of the defendant carriers and taking of further testimony. In deciding this case, the Commission refers to the decision of the Supreme Court of the United States in the case of Wisconsin, Minnesota & Pacific v. Jacobson, holding that an order of the State Commission of Minnesota directing a physical connection between two railroads of that state in pursuance of a statute of the state was a valid exercise of authority, and the Commission sees no reason why Congress may not, as it has done, exercise the same authority over a railroad handling interstate traffic which the state can exercise with respect to state traffic.

Dissenting opinions are filed by the Chairman and Commissioners Clark and Harlan.

Through Rate Reduced to Sum of Locals; State Legislation No Bar to Power of the Commission.

The Interstate Commerce Commission, in an opinion by Commissioner Harlan, decides the case of Hope Cotton Oil Co. v. Texas & Pacific and St. Louis, Iron Mountain & Southern. The complaint alleged that defendants' joint through rate of 67 cents per 100 lbs. on cotton seed, carloads, from points north of Shreveport, La., on the Texas & Pacific, via Texarkana to Hope, Ark., on the St. L., I. M. & S., is unreasonable, and that a reasonable rate would be a through rate equal to the sum of the present local rates in and out of Texarkana, which is 17.5 cents per 100 lbs. After complaint was filed, defendants put in effect between the points of origin in Louisiana and Hope a joint through rate of 30 cents per 100 lbs. on cotton seed in carloads with a minimum weight of 30,000 lbs. per car. The Commission holds, upon the record, that the present through rate of 30 cents is unreasonable and that it should not exceed 17.5 cents, the sum of the locals, with a minimum carload weight of 30,000 lbs. The carriers are ordered to put the reduced rate in force on or before August 26.

The Commission further says that while a rate fixed by a state statute or a state commission is naturally and properly entitled to respectful consideration, it has no greater sanctity, as applied to interstate traffic, than a rate established by a railroad; and the Commission will not hesitate, on proper evidence that a rate so

established would be unjust either to a carrier or to a shipper, to refuse to accept it as a basis for fixing an interstate rate.

Compression Privileges on Cotton.

The Interstate Commerce Commission, in an opinion by Commissioner Lane, has decided the case of Muskogee Commercial Club and Muskogee Traffic Bureau v. Missouri, Kansas & Texas. In this case it appeared that defendant's rule for compression of cotton in transit allows uncompressed cotton, on demand of shippers, to be taken out of Muskogee, Ind. T., and points north, including the Tulsa division, for compression at South McAlester, Ind. T., but does not allow uncompressed cotton to be taken out of or through South McAlester for compression at Muskogee. A large part of the cotton grown in the territory tributary to Muskogee is sold in the East, and is always compressed before being loaded for the long haul. Under the practice of compressing at South McAlester, uncompressed cotton originating at Muskogee and points north is hauled by defendant to South McAlester, unloaded at that compress, compressed, reloaded and then hauled back over the same line of railroad, passing again through Muskogee to defendant's eastern terminus, involving an extra service of 124 miles for which defendant receives no compensation. The Commission held, upon these facts, that defendant's rule for compression of cotton results in undue prejudice against Muskogee, and that defendant should grant all the privileges to one compression point herein considered that it grants to the other.

The Commission also held that the fact that a compress company at South McAlester has another compress at Fort Smith and threatens, unless the foregoing preference is given to its compress at South McAlester, to divert its cotton traffic to another railroad, does not justify discrimination in the rules or practices of defendant, as the competition described is not the character of competition that relieves from the operation of the statute.

The question of compression of cotton in transit, says the Commission, is not one with which a railroad may deal entirely as it sees fit and without respect to the effect which its practices have on the transportation of cotton. Either the carrier must publish a rate on uncompressed cotton and another rate on compressed cotton and divorce itself entirely from the matter of compression, or else such compression as is given by the railroad becomes subject to the jurisdiction of the Commission. Where a railroad company declares a policy which allows compression of cotton in transit at the nearest point it cannot vary that rule so as to give certain shippers the opportunity to avoid it and thereby receive an advantage which is not given to shippers generally.

Toll by the Coast Line Route to San Francisco Abolished.

The Interstate Commerce Commission on July 12, in an opinion by Commissioner Lane, decided the San Francisco Toll Case, which involved the right of the Southern Pacific to charge as a part of its rate to San Francisco a state toll of 5 cents a ton. The Southern Pacific enters San Francisco by two lines, one from the northeast, known as the Ogden route, which reaches San Francisco bay at Oakland; and traffic by this route is ferried across the bay, landed on the wharves in San Francisco, and hauled thence to its station and yards. The second route, known as the Coast Line, comes from the southeast, following generally the line of the ocean shore, and enters San Francisco by the all-rail peninsular route, landing its traffic at the railroad company's station. The Ogden line is much the older of the two, and was, until merged with the Southern Pacific, the Central Pacific. The Coast Line, by which freight is transported to and from San Francisco without crossing San Francisco bay or the wharves or water front of San Francisco, has been open only since June, 1901.

The title to the land which constitutes the water front of the city and county of San Francisco is in the state of California, and the general charge and management of this water front, and of the docks and wharves erected along the same, are in the board of state harbor commissioners, which is vested by law with the right to collect charges for dockage, wharfage and tolls, and to fix and regulate the rates of dockage, wharfage, cranage, tolls and rents for their use. In accordance with this power, the board has fixed a schedule of tolls on merchandise passing over these state premises, ranging proportionately downward from 5 cents a ton to 1 cent on 400 lbs. or less.

Commissioner Lane continues: Traffic moves from the east via the Coast Line to San Francisco, and is there delivered to the consignee, to whom is presented an expense bill showing, among other items, the articles carried, their weight, the rate of transportation, total freight charges, and, in addition, under the heading "Toll," the amount which the consignee would have been required to pay upon the shipment had the shipment moved by the transbay route instead of by the Coast Line. In other words, the rate to San Francisco is exactly the same by both routes; but when the traffic moves across the bay from Oakland to San Francisco the Southern Pacific collects a toll which it in turn pays to the state for the use of its wharves; whereas if the shipment moves by the Coast Line and enters San Francisco without crossing the bay, an expense bill of precisely the same character, and including a charge for toll, is presented to the consignee. Thus the question arises, Why should the railroad be allowed to charge a toll on Coast Line shipments which it is not required itself to pay, and which is not in any way a charge which the railroad has to meet, and for which it renders no service?

The theory on which transcontinental rates are made is that the rail carriers are compelled to meet the competition of the water carriers doing business out of San Francisco bay. Prior to the time of transcontinental rail carriage transportation from the Eastern states to San Francisco was wholly by water or by the Panama or Nicaragua routes; and when the first transcontinental railroad line reached tide water it found itself compelled to meet this competition. On this theory the transcontinental lines have justified, and properly so, lower rates to San Francisco than to intermediate points. The rate to Pacific Coast Terminals is designated by railroad men as a compelled rate—one which the carriers themselves would not make were they not required to do so by water competition.

When the Ogden line reached San Francisco bay at Oakland it found that to deliver goods in San Francisco it was compelled to pay an arbitrary toll fixed by the state for crossing the state lands abutting the bay upon which the wharves surrounding San Francisco were built. It therefore inserted in its tariffs a note to the effect that, in addition to the regular transportation charges, freight arriving at San Francisco would be required to meet an additional toll charge—a charge which the freight brought to San Francisco by ocean carriers was also compelled to meet. Later, when the Coast Line was built, the same tariff was made applicable to freight carried by that route, and thus it results that freight into San Francisco by the coast route bears an arbitrary charge of 5 cents a ton for crossing a wharf which it never crosses.

The Southern Pacific's contention, however, is that it is entitled to make this charge on a shipment which does not cross the bay, because it may properly impose on transcontinental business any rate, not unreasonable in itself, which it can get in competition with water carriers, and therefore may include in its rate an amount equivalent to the state toll, because the water competition which it has to meet must always be compelled to meet the toll charges of the state.

This argument is adroit, but does not appeal to us as conclusive. The tariff would make it appear that this toll charge was actually imposed on all freight entering San Francisco. This, we perceive, is not the fact. Moreover, all eastbound freight leaving San Francisco is not subject to this charge, at least as a toll charge, no matter by what route it goes. The toll, it is contended, when toll is paid, is in fact included in the rate itself—is absorbed by the carrier and not specifically and separately charged as in the case of westbound business.

If the rate to San Francisco by the Coast Line, including the additional toll charge, is in and of itself reasonable, there is no reason why the tariff applicable to the Coast Line cannot be made to state, as the law requires, the full rate via that route to San Francisco. But it is to be noted that Sacramento, Stockton and other cities farther inland than San Francisco are given the benefit of terminal rates without such additional toll charge, although the one reason that is assigned for supporting such rates is their proximity to San Francisco, through which city alone they have the advantage of water competition.

The history of this toll provision leads to the conclusion that it was never intended as a part of the transportation rate; and certainly if the Coast Line had been first built its tariff would not have contained any such provision. Why, then, should we now regard it as properly inserted in a Coast Line tariff? Moreover, the law does not contemplate that a rate shall be made by including charges which the carrier does not in fact meet; and a tariff or schedule of transportation rates which makes the rate charged dependent upon one or more factors which do not enter into the transportation as it is actually conducted, does not conform to the law. To illustrate: A rate over the New York Central into New York city from the West could not properly be stated as $1 per 100 lbs. with a notation elsewhere in the tariff stating that all goods destined to New York city would bear an additional charge equivalent to the cost of lighterage from Jersey City to New York, which all rival carriers entering New York are compelled to pay.

It will be ordered, therefore, that the Southern Pacific shall cease from making any charge for toll at San Francisco when such toll charge is not actually paid by the carrier.

TRADE CATALOGUES.

Hicks Locomotive & Car Works.—A book illustrating the plants, equipment and products of this company has just been issued. It is a 100-page volume, 9¼ x 12, printed on calendered paper, with board covers. The company has two plants at Chicago Heights,

Ill. The West works include the locomotive and passenger car departments; the East works are the freight car shops. General and detail views of each plant are shown; also typical views of new and rebuilt locomotives turned out by the locomotive department and of locomotives overhauled for different large railroads. All kinds of cars from private and dining to baggage and express, and freight equipment of all classes, are illustrated; also some special equipment, such as ballast spreaders and gasolene-electric motor cars. All the illustrations are excellent half-tones, made from photographs. Their arrangement and the general make-up of the volume reflect credit on its compiler.

Railroad Track and Other Scales.—Bulletin No. 111 of the Buda Foundry & Manufacturing Co., Chicago, deals with scales. Railroad track scales, coal mine, depot and warehouse, wagon, elevator, portable and other scales, recording beams and quick-weighing devices, are described and illustrated, and lists of parts given for each.

Structural Steel.—The Interstate Engineering Co., Cleveland, Ohio, is distributing advance sheets from Bulletin No. 8, soon to be issued. The circular, No. 101, illustrates some examples of structural steel work recently done by this company.

MANUFACTURING AND BUSINESS.

The Seaboard Air Line has given the contract for the oil-burning furnaces for its new shops at Jacksonville, Fla., to Tate, Jones & Co., Inc., Pittsburg, Pa.

Atwood Paxson & Company has been formed to deal in iron and steel products and railroad equipment and supplies, with office at 120 Liberty street, New York. Mr. Paxson was for some years with L. J. Buckley & Company, of New York city.

P. G. Ten Eyck, hitherto Treasurer and Chief Engineer of the Federal Railway Signal Co., Troy, N. Y., has been appointed Vice-President, with office at Albany, N. Y. The officers are now: J. T. Cade, President; Lawrence Griffith, Vice-President; P. G. Ten Eyck, Vice-President; Frederic Pruyn, Treasurer; C. E. Newman, Secretary.

Gilbert Greenbusch, C.E., of London, England, is in New York for a few weeks with address at 17 Battery Place. He is an American engineer, graduate of Stevens Institute, with ten years' residence in London, where he is an associate member of the British Institute of Civil Engineers. He has just completed his work as engineer in charge of construction of the lifts in the London underground electric railways and now proposes to introduce American mechanical and electrical specialties in Europe. He is well equipped in character, knowledge and acquaintance.

Hermann von Schrenk, well-known to readers of the *Railroad Gazette*, has resigned as Pathologist in charge of investigations of timber diseases and methods for their prevention in the United States Department of Agriculture, and has associated himself with E. B. Fulks and Alfred L. Kammerer, Consulting Timber Engineers, with office at Tower Grove and Flad avenues, St. Louis. Mr. von Schrenk has been appointed Timber Engineer of the Rock Island, the St. Louis & San Francisco and the Chicago & Eastern Illinois railroad systems. His new office will be prepared to carry on investigations and make reports on all problems dealing with the best methods for handling and using timbers. It would seem that this is a field of great usefulness, since work of this character is highly important now and must constantly become more so as the timber reserves of the country become cut off.

Iron and Steel.

The Atchison, Topeka & Santa Fe has ordered 30,000 tons, and the Delaware, Lackawanna & Western 7,500 tons of rails from the Bethlehem Steel Co. for 1908 delivery. They are to be rolled in the new rail mill now nearly completed at Bethlehem and will be made from open hearth steel with a maximum of .04 phosphorus. The Santa Fe specifications require 25 per cent. crop on the ingots and the Lackawanna 20 per cent. It is reported, though it cannot be confirmed, that the price is $35 a ton, an increase of 25 per cent. over the pool price.

OBITUARY NOTICES.

Charles H. Nye, formerly and for a number of years Superintendent of the Cape Cod division of the Old Colony Railroad, now part of the New York, New Haven & Hartford, died at his home at Hyannis, Mass., on July 9. Mr. Nye was 85 years old.

W. H. Hayden, Advertising Manager of the Boston & Maine, died at Littleton, N. H., on July 8, a few hours after being thrown out of a carriage. Mr. Hayden went to the Boston & Maine at the end of last year, after having been in charge of advertising on the Central of New Jersey for five years. He was 35 years old at the time of his death.

Charles H. Rockwell, General Traffic Manager of the Chicago, Indianapolis & Louisville, died on July 6, at Indianapolis, Ind., of heart failure. Mr. Rockwell was born in 1852 at Terre Haute, Ind., and began railroad work in 1869 as an assistant yard clerk on the Cleveland, Columbus, Cincinnati & Indianapolis, now part of the Big Four. He worked his way up through several positions, on roads which are now parts of the New York Central Lines, until 1884, when he was made Auditor of the Cincinnati, Hamilton & Dayton. After serving as General Passenger and Ticket Agent of that road, he went to the Pullman Company in 1889 as Secretary to the President, but a few months later was made General Superintendent of the Columbus, Hocking Valley & Toledo, now part of the Hocking Valley. Two years later he was appointed General Superintendent of the Chicago & Eastern Illinois, and in 1893 was made Assistant to the President of that road. Later in the same year he went to the Cleveland, Akron & Columbus as General Passenger Agent. From 1895 to 1897 he was Auditor of the Western Passenger Association and then took the office which he held at the time of his death.

MEETINGS AND ANNOUNCEMENTS.

(For dates of conventions and regular meetings of railroad conventions and engineering societies, see advertising page 24.)

International Railroad Master Blacksmiths' Association.

The fifteenth annual convention of this association is to be held at Montreal, Canada, August 20, 21 and 22. Headquarters will be in the Bath Hotel, where accommodation can be had at a rate of $2.50 a day for each person, including all meals.

The subjects to be presented are: Flue Welding, John Conners, Chairman;

Tools and Formers for Bulldozers and Steam Hammers, G. M. Stewart, Chairman;

Piece Work, Grant Bollinger, Chairman;

Discipline and Classification of Work, S. Uren, Chairman;

Case Hardening Methods, Time Taken and Samples, Geo. Masser, Chairman;

Best Fuel for Use in Smith Shop, Jos. Jordan, Chairman;

Frame Making and Repairing, Grant Bollinger, Chairman;

Thermit Welding, Geo. Kelly, Chairman.

Master Car and Locomotive Painters' Association.

The thirty-eighth annual convention of this association is to be held at St. Paul, Minn., September 10-13. Arrangements have been made for hotel accommodation on the American plan at the Hotel Ryan, at prices ranging from $3 to $4 a day for each person. The subjects for discussion are as follows:

Painting of Steel Passenger Cars, a composite paper by John D. Wright (B. & O.), H. M. Butts (N. Y. C. & H. R.), and R. J. Kelly (Long Island);

Disinfecting Passenger Cars at Terminals, H. E. Smith (L. S. & M. S.), R. W. Mahon (N. Y. C. & H. R.), A. J. Bruning (L. & N.);

Cleaning, Coloring and Lacquering of Metal Trimmings, B. E. Miller (D., L. & W.), Geo. Warlick (C., R. I. & P.), C. A. Cook (P., B. & W.);

Painting Locomotives and Tenders, J. H. Kahler (Erie), W. A. Buchanan (D., L. & W.), E. Daly (C., C., C. & St. L.);

Linseed Oil Substitutes and Drying Oils, W. O. Quest (P. & L. E.), W. H. Smith (Southern Ry.).

There is also to be an essay on Problems of the Present-day Paint Shop, by Chas. E. Copp (B. & M.).

There will also be a number of queries as follows:

Have you found any coating that will resist rust? Discussion opened by Chas. E. Becker (C., C., C. & St. L.).

Denatured Alcohol—Is it a satisfactory substitute for grain alcohol? Discussion opened by W. J. Orr (Erie).

Is it advisable to apply three coats of body color to a car? Discussion opened by J. Gearhart (Penn.).

Can light colored freight car stencil paints be improved? Discussion opened by W. Bailey (B. & M.).

Is pressed fiber as durable as a three-ply wood veneer? Discussion opened by O. P. Wilkins (N. & W.).

What should be the nature of a detergent? Discussion opened by B. E. Miller (D., L. & W.).

ELECTIONS AND APPOINTMENTS.

Executive, Financial and Legal Officers.

Alabama & Vicksburg.—See New Orleans & North-Eastern.

Ashland, Odanah & Marengo.—The officers of this company are as follows: President, L. K. Baker, with office at Odanah, Wis.; Vice-President, J. Stearns, with office at Ludington, Mich.; Secretary and Treasurer, E. B. Hill; General Freight Agent, F. J. Darke; Superintendent, E. Mercier, and Auditor, D. J. McMahon, all with offices at Odanah.

Boyne City, Gaylord & Alpena.—The office of Traffic Manager has been abolished. C. J. Wilson has been appointed General Freight and Passenger Agent and Assistant Superintendent. G. W. Laing, Purchasing Agent, has been appointed also Auditor. W. L. Martin has been appointed Superintendent. Frank Butler has been appointed Trainmaster.

Brinson Railway.—The officers of this company are as follows: President and Superintendent, G. M. Brinson; Vice-President and Traffic Manager, Charles Neville, heretofore General Freight and Passenger Agent of the Georgia Coast & Piedmont; Auditor, E. K. Bonney, all with offices at Springfield, Ga.

Cairo Northern.—The officers of this company are as follows: President, W. T. Whiteman; General Manager, E. M. Decker; Traffic Manager, T. Tilford; General Freight Agent, C. P. Bowen, and General Passenger Agent, W. S. Bowen, all with offices at Cairo, Tex.

Central of New Jersey.—F. T. Dickerson has been appointed Assistant Secretary, succeeding Joseph James, Jr.

Charlotte Harbor & Northern.—The officers of this road, which will be opened for traffic on August 1, are as follows: Second Vice-President and General Manager L. M. Fouts, with office at Jacksonville, Fla.; General Freight and Passenger Agent J. L. de Treville, with office at Arcadia, Fla.; Superintendent C. B. McCall and Auditor W. J. Gilligan, both with office at Hull, Fla.

Chicago & Calumet River.—F. N. Hoffstot, President, and J. W. Friend, Vice-President, of the Pittsburg, Allegheny & McKee's Rocks, have been elected also to these offices on the Chicago & Calumet River.

Corvallis & Eastern.—G. W. Talbot, Vice-President and General Manager, has resigned to go to the Oregon Electric with the same title.

Georgia Coast & Piedmont.—W. R. Basset has been appointed Auditor, succeeding W. B. Scott. See Brinson Railway.

Mississippi Eastern.—Walter Stone has been appointed Auditor, with office at Quitman, Miss.

Mobile, Jackson & Kansas City.—L. S. Berg, formerly President of the New Orleans Terminal, has been elected President of the Mobile, Jackson & Kansas City, succeeding B. M. Robinson, resigned.

New Orleans & North-eastern.—L. A. Jones, Auditor, has been elected also Vice-President of this road and of the Alabama & Vicksburg and the Vicksburg, Shreveport & Pacific, succeeding D. D. Curran, who was recently elected President.

New York Central & Hudson River.—William J. Wilgus, Vice-President, has resigned and his service with this company will end on October 1 next. He does not expect to enter other railroad service; it is probable, rather, that his future work will be in an advisory capacity. He leaves indelible marks on the property of the company of which he has been a general officer only eight years. He became Chief Engineer in May, 1899, and began at once to standardize the roads, track and structures. His large blue print volume of standard drawings of ballast, track signs, signal posts, culverts, bridges and structures of all kinds is a monument of industry and skill. He fulfilled the instruction of the then President, Mr. Callaway: "Make it so that I can wake up anywhere on the line and look out of the window and know I am on the Central." His far-seeing advocacy, as well as construction, of the Beech Creek extension, which insures the company's supply of bituminous coal, was much to his credit. He will long be best known for having planned, designed and executed the electrification of the New York City terminal, an engineering work of the first magnitude and made difficult by the necessity for keeping the terminal open for the heavy traffic of two great railroads while it is being entirely reconstructed, both under and above ground. Of his most startling innovation in engineering methods, comparatively little has been said. His entirely novel method of tunnel construction is now being carried out under his own supervision for the Michigan Central's traffic under Detroit river, and the cost of it, as contracted for, is just one-half the price bid by Sir Weetman Pearson's contracting firm. There is no reason to expect that the ambitions of this engineer, less than 42 years old, are at all satisfied, or that there will be any considerable intermission in his activities.

William J. Wilgus.

See Toronto, Hamilton & Buffalo.

New York Public Service Commissions.—John S. Kennedy, of Corning, N. Y., has been appointed Secretary of the Commission for the Second district. Mr. Kennedy had been for several years Secretary of the New York State Railroad Commission. T. H. Whitney is Secretary of the Commission for the First district, the office of which is at 320 Broadway, New York City.

Pittsburg, Allegheny & McKee's Rocks.—See Chicago & Calumet River.

Rio Grande, Sierra Madre & Pacific.—The authority of the officers of this company have been extended over the Sierra Madre & Pacific.

Shreveport, Houston & Gulf.—The officers of this company are as follows: President, W. T. Carter, with office at Houston, Tex.; Vice-President and General Manager, G. A. Kelley; Secretary and Treasurer, C. C. Gribble, and Auditor and Traffic Manager, L. D. Garrison, all with offices at Manning, Tex.

Sierra Madre & Pacific.—See Rio Grande, Sierra Madre & Pacific.

Silver Lake Railway.—L. S. Ward has been appointed Treasurer, with office at Rochester, N. Y., succeeding G. L. Eaton, resigned.

Southern.—J. S. B. Thompson, General Agent of the Executive Department at Atlanta, Ga., has been appointed Assistant to the President, with office at Atlanta.

Toronto, Hamilton & Buffalo.—D. W. Pardee, Secretary of the New York Central & Hudson River, has been elected also Secretary of the Toronto, Hamilton & Buffalo.

Vicksburg, Shreveport & Pacific.—See New Orleans & North-eastern.

Operating Officers.

Atchison, Topeka & Santa Fe.—A third grand division has been created and H. W. Sharp, Superintendent at Kansas City, Mo., has been appointed General Superintendent of it, with office at La Junta, Colo. D. Farley succeeds Mr. Sharp.

Atlantic Coast Line.—The First division is to be divided into two divisions, to be known as the First division and the Second division. The new First division will consist of the lines between Richmond, Va., and Florence, S. C., and the Second division of the lines between Florence and Savannah, Ga. The present Second division, from Savannah, Ga., to Jacksonville, Fla., will hereafter be known as the Third division, while the present Third division, consisting of the lines in Florida, will become the Fourth division. A. W. Anderson, General Superintendent of the present First division, has been appointed General Superintendent of the new Second division, with office at Florence. W. H. Newell, Superintendent of Transportation of the present First division, has been appointed General Superintendent of the new First division, with office at Rocky Mount, N. C. J. C. Murchison, Superintendent of the Wilmington district, succeeds Mr. Newell, with office at Wilmington, N. C. All appointments are effective August 1.

Brooklyn Rapid Transit.—W. S. Menden, Chief Engineer, has been appointed General Superintendent, succeeding D. S. Smith, resigned.

Central of Georgia.—J. J. Cotter has been appointed Superintendent at Cedartown, Ga., succeeding R. J. Armstrong, resigned.

Chicago & Illinois Western.—H. Bates, foreman of locomotive and car repairs, has been appointed General Superintendent, succeeding D. P. Plummer.

Colorado & Northwestern.—C. M. Williams has been appointed Superintendent, with office at Boulder, Colo.

Colorado Southern, New Orleans & Pacific.—G. Kennedy has been appointed Trainmaster at Eunice, La.

Illinois Central.—T. L. Dubbs, Superintendent at Nashville, Tenn., has been appointed Superintendent of the Birmingham division. L. E. McCabe, Trainmaster at Louisville, Ky., succeeds Mr. Dubbs.

Interoceanic of Mexico.—See National Lines of Mexico under Engineering and Rolling Stock officers.

Lehigh & New England.—J. V. Lyddon has been appointed Trainmaster at Pen Argyl, Pa., succeeding J. E. Curry, resigned.

Malheur Valley.—See Oregon Short Line.

Minidoka & Southwestern.—See Oregon Short Line.

National Lines of Mexico.—Hugh McGehee Taylor, who was recently appointed Assistant General Manager, was born at Montgomery, Ala., in 1870. He graduated from the Alabama Polytechnic Institute in 1889, and immediately began railroad work as a draftsman on the Birmingham Mineral division of the Louisville & Nashville. He worked his way up on this road until he became resident engineer in charge of construction of the Coosa river bridge near Shelby, Ala. In 1891 he went to the National of Mexico as engineer and supervisor; he served as brakeman, conductor and yardmaster until 1895, when he was made Trainmaster at Laredo. Five years later he was made Division Superintendent, and in 1902 Superintendent of Construction of the Mexico-Gonzalez line. In 1904 he was appointed General Manager of the Interoceanic of Mexico, where he remained until his recent appointment as Assistant General Manager of the National Lines of Mexico in charge of engineering and maintenance.

National Railroad of Mexico.—See National Lines of Mexico under Engineering and Rolling Stock officers.

Oregon Short Line.—C. M. Hunt, Superintendent of the Pacific & Idaho Northern, has been appointed to the new office of Trainmaster of the Third, Fourth and Fifth districts of the Idaho division and the Boise branch of the Oregon Short Line, the Minidoka & Southwestern and the Malheur Valley, with office at Nampa, Idaho.

Pacific & Idaho Northern.—See Oregon Short Line.

Rio Grande Western.—A. B. Apperson, Assistant Superintendent at Helper, Utah, has been appointed Assistant Superintendent at Salt Lake City, Utah, succeeding H. J. Roth. R. R. Sutherland succeeds Mr. Apperson.

St. Louis, Brownsville & Mexico.—G. B. Huestis, General Superintendent, has been appointed Superintendent of the First division, consisting of the line from Brownsville to Kingsville and the Hidalgo branch, and the office of General Superintendent has been abolished. Oliver Rowe has been appointed Superintendent of the Second and Third divisions, consisting of the line from Kingsville to Algoa and the joint track from Corpus Christi to Robstown. E. T. Gibson has been appointed Trainmaster of the whole road. W. B. Upp has been appointed Car Accountant, succeeding C. J. Crane. The offices of all are at Kingsville, Tex.

Trinity & Brazos Valley.—W. A. Allison, who was recently appointed Superintendent of Telegraph, was born at Glade Spring, Va., in 1875, and began railroad work in 1891 as a telegraph operator on the Norfolk & Western. He was appointed train despatcher in 1897, and soon after went to the Baltimore & Ohio in the same position. He was later appointed to the same office on the Missouri, Kansas & Texas, and in 1899 went to the Illinois Central as despatcher at McComb, Miss. He was made chief train despatcher at that place in 1903 and in 1905 was appointed Trainmaster of the Memphis division of the Yazoo & Mississippi Valley, where he remained until he resigned in June of the current year to go to the Trinity & Brazos Valley.

W. A. Allison.

Traffic Officers.

Atlantic Coast Line.—A. C. Kenly, Freight Claim Agent, has been appointed Superintendent of Freight.

Bedford Stone Railway.—J. G. Ray has been appointed General Freight Agent, succeeding H. W. Walters, resigned.

Brookhaven & Pearl River.—W. J. Helmick has been appointed General Freight and Passenger Agent, with office at Brookhaven, Miss., succeeding Alfred Mead, resigned to go to another company. See Tremont & Gulf.

Chicago, Rock Island & Pacific.—H. C. Battles has been appointed to the new office of General Agent at Peoria, Ill.

Delaware & Eastern.—A. M. White has been appointed General Freight and Passenger Agent, with office at New York, succeeding Webb Harrison, resigned.

Michigan Central.—H. R. Daly has been appointed General Agent at Grand Rapids, Mich.

Minneapolis, St. Paul & Sault Ste. Marie.—J. S. Carter has been appointed General Agent at Spokane, Wash.

Missouri Pacific.—J. B. Trimble, General Agent at Pueblo, Colo., has been appointed General Agent at Pittsburg, Pa., succeeding John Walsh.

National Lines of Mexico.—The territory to be covered hereafter by the General Eastern Agent, at New York, will include Pennsylvania, New England and the Atlantic states, as well as Nova Scotia, New Brunswick and that part of Ontario east of a north and south line passing through Port Huron, Mich. The territory of the General Western Agent, at Chicago, includes all the rest of the United States and Ontario except Texas, Oklahoma and Indian Territory, which will be in charge of the General Agent at San Antonio, Tex., who, however, will not have charge of the Texas-Mexican Railway.

St. Joseph & Grand Island.—H. C. Mitchell has been appointed General Agent at Pittsburg, Pa.

Sierra Valley Railway.—W. H. O'Neill has been appointed Assistant Traffic Manager.

Somerset Railway.—F. V. Berry has been appointed Assistant General Freight and Passenger Agent, with office at Oakland, Me.

Tremont & Gulf.—Alfred Mead, General Freight and Passenger Agent of the Brookhaven & Pearl River, has been appointed General Freight and Passenger Agent and Assistant Superintendent of the Tremont & Gulf.

Western Maryland.—F. M. Howell, General Passenger Agent, has been appointed General Passenger and Ticket Agent, succeeding to the duties of James D. Whittington, General Ticket Agent and Ticket Auditor, who has resigned on account of ill health, and whose former position has been abolished.

Engineering and Rolling Stock Officers.

Colorado & Northwestern.—Leonard Ruhle has been appointed Master Mechanic, with office at Boulder, Colo., succeeding M. Fitzgerald.

Colorado & Southern.—H. W. Ridgway, Master Mechanic at Trinidad, Colo., has been appointed Master Mechanic at Denver, Colo., succeeding D. Patterson, resigned.

Manitoulin & North Shore.—C. M. Colburne has been appointed Chief Engineer, with office at Sault Ste. Marie, Ont.

Mexican International.—See National Lines of Mexico.

National Lines of Mexico.—G. P. De Wolf, Superintendent of Terminals of the National Railroad of Mexico at Mexico City, has been appointed Assistant Chief Engineer of the Mexican International, with office at C. Porfirio Diaz, Coahuila, Mex., succeeding C. J. Carroll, resigned to go into other business. E. W. Bowans, Trainmaster of the Interoceanic of Mexico at Pueblo, succeeds Mr. De Wolf.

Purchasing Agents.

Georgia & Florida.—J. M. Turner, General Manager, has been appointed also Purchasing Agent.

LOCOMOTIVE BUILDING.

The Southern is about to buy 50 light locomotives.

The Central Vermont is said to be figuring on 10 locomotives.

The Grand Trunk Pacific, it is said, is about to buy 50 eight-wheel locomotives.

The Grand Trunk, it is understood, is to buy 100 locomotives within the next two months.

The Yosemite Valley has ordered one eight-wheel locomotive from the American Locomotive Company.

The Green Bay & Western has ordered one mogul locomotive from the American Locomotive Company.

The Santa Fe, Raton & Des Moines has ordered one ten-wheel locomotive from the American Locomotive Company.

The Hanyang Steel & Iron Works has ordered one four-wheel tank engine from the American Locomotive Company.

The Burden Iron Company has ordered one four-wheel switching locomotive from the American Locomotive Company.

The Carnegie Steel Company has ordered one six-wheel switching locomotive from the American Locomotive Company.

The Memphis Warehouse Company has ordered one six-wheel switching locomotive from the American Locomotive Company.

The Intercolonial has ordered 22 locomotives from the Kingston Locomotive Works and the Locomotive & Machine Company of Montreal.

The Louisville & Nashville has ordered eight consolidation Baldwin and switching locomotives from the American Locomotive Company.

The Savannah, Augusta & Northern, which is to build a road in Georgia, has ordered two mogul locomotives from the American Locomotive Company. W. J. Oliver, Knoxville, Tenn., is understood to have the contract for building the road.

CAR BUILDING.

The Dayton & Troy Electric, Dayton, Ohio, will buy two large interurban cars.

The Central of Georgia is said to be preparing specifications for 1,000 freight cars.

The Missouri, Oklahoma & Gulf has ordered from 50 to 100 cars from Barney & Smith.

The Cold Blast Transportation Company, Chicago, is asking prices on 200 stock cars.

The Hanover & York has ordered six cars from the Niles Car & Manufacturing Company.

The Central of New Jersey has ordered 1,000 freight cars from the Cambria Steel Company.

The Pittsburg, Shawmut & Northern is said to be preparing plans for a number of coke cars.

The Chicago, Burlington & Quincy has ordered 1,000 steel gondola cars from Barney & Smith.

The Intercolonial has ordered 3,000 freight cars, mostly from the Crossen Manufacturing Company and Rhodes, Curry & Company.

The Illinois Central has ordered 3,000 steel underframe box cars of 100,000 lbs. capacity from the American Car & Foundry Company.

The Storz Brewing Co., Omaha, Neb., is said to be building four refrigerator cars at the Plattsmouth, Neb., shops of the Chicago, Burlington & Quincy.

The Southern is about to buy 75 passenger coaches, four dining cars, six combination mail and baggage cars, six combination passenger and baggage cars and 200 cabooses.

The Las Vegas & Tonopah, as reported in the *Railroad Gazette* of June 28, has ordered three standard 60-ft. coaches and three standard 60-ft. baggage cars from the Pullman Co., for October delivery. The special equipment for both includes:

Heating system	Safety
Light	Pintsch
Paint	Murphy System

The Marquette & South Eastern, as reported in the *Railroad Gazette* of July 5, has ordered 20 flat cars of 80,000 lbs. capacity from the Hicks Locomotive & Car Works, for July 25 delivery. These cars will be 41 ft. long and 9 ft. wide, over all. The special equipment includes:

Bolsters	Bettendorf
Brake-beams	Simplex
Brakes	Westinghouse
Couplers	Tower
Draft rigging	Miner
Journal boxes	Symington

The Connecticut Company, which buys the equipment for the electric lines of the New York, New Haven & Hartford, has ordered the following cars:

New Haven Line	16	double	truck,	30-ft.	closed	cars.
Hartford Line	24	"	"	30-ft.	"	"
Bridgeport Line	10	"	"	30-ft.	"	"
South Norwalk Line	3	"	"	30-ft.	"	"
Derby Line	10	"	"	30-ft.	"	"
New Britain Line	2	"	"	30-ft.	"	"
Milldale Line	2	"	"	30-ft.	"	"
Waterbury Line	11			30-ft.	"	"
Stafford Springs Line	4			30-ft.	"	"
New York & Stamford	12			30-ft.	"	"
Norwich Line	1			33-ft.	"	"
Middletown Line	8			33-ft.	"	"
Rhode Island Lines	30				"	"

The company has also ordered snow plows from the Wason Car Co. as follows:

Hartford Line	3	Bridgeport Line	1
Stafford Springs Line	1	Derby Line	3
N. Y. & S. Line	1	Waterbury Line	2
Middletown Line	1	Milldale Line	1
Norwich Line	1		

Special Equipment.

Bodies	Wason
Brakes	Allis-Chalmers
Heaters	Consolidated electric
Motors for New Haven Line, Hartford Line, Stafford Springs Line, New York & Stamford and Rhode Island Lines	General Electric Co.
Motors, for all other cars and for all snow plows	Westinghouse
Registers	New Haven
Trolleys	Sterling-Meaker
Trucks	Standard Motor Truck Co.'s
Wheels	Schoen rolled steel

RAILROAD STRUCTURES.

Alfalfa, Tex.—Surveys, it is reported, are being made by the Galveston, Harrisburg & San Antonio for a new yard here.

Birmingham, Ala.—The new passenger station, built at a cost of $1,500,000, was recently opened for traffic.

Columbus, Ga.—The Columbus Railway Company is planning to put up a two-story brick car barn.

Frankfort, Ind.—The Toledo, St. Louis & Western, it is said, will spend about $150,000 in the enlargement of its shops here.

Garden City, Kan.—The Atchison, Topeka & Santa Fe will build a new passenger station and additional tracks here to cost about $25,000.

Havre de Grace, Md.—The Baltimore & Ohio has given the contract for construction of the substructure of the new double-track bridge over the Susquehanna river at this place to Eyre-Shoemaker, Inc., of Philadelphia, Pa., and it is expected that the work will be started at once. The contract for the superstructure was let about six weeks ago to the American Bridge Company. This bridge will be double-track throughout, require about 45,000 cu. yds. of masonry in the substructure and between 14,000 and 15,000 tons of steel work in the superstructure. It will be 7,000 ft. long and the largest bridge on the Baltimore & Ohio system. It will take about three years to build the bridge and the cost will be about $2,000,000. The masonry work will consist of a new abutment at the west end and a pier on the west bank, four new intermediate piers in the west channel, 21 piers on Watson's Island and one new pier in the east channel.

Kansas City, Kan.—The Atchison, Topeka & Santa Fe, it is said, has given a contract to H. G. Douglas, of Topeka, Kan., for putting up shops to replace those recently destroyed by fire.

Kansas City, Mo.—The Kansas City Southern, it is reported, has bought land between Second and Third streets and Broadway and Wyandotte streets, on which additional tracks are to be laid and other improvements made to increase terminal facilities.

Lima, Ohio.—The Lima & Toledo Traction Company is planning to put up a new passenger station to cost $50,000.

Memphis, Tenn.—A permit has been given to the Illinois Central to put up a brick freight house, at a cost of about $50,000, to replace the structure destroyed by fire some time ago.

Mobile, Ala.—Local reports state that the Louisville & Nashville will not use the new union passenger station, but will build a station for its own use.

St. Louis, Mo.—The Missouri Supreme Court in a recent decision upheld the validity of the St. Louis $3,500,000 bridge bond issue. This will make possible the issuance of $1,000,000 of the bonds, so that work on the proposed bridge over the Mississippi river can be started.

Sherman, Tex.—Work has been started rebuilding the Frisco shops recently destroyed by fire. The four brick buildings to be put up are to cost about $60,000, and the machinery $55,000.

Sunbury, Pa.—The Pennsylvania, it is said, is planning to build a bridge over the Susquehanna river to carry four tracks.

Teague, Tex.—The Trinity & Brazos Valley machine shops, roundhouse and terminals to be built at this place will cost about $500,000.

Valdosta, Ga.—The Georgia Southern & Florida has plans ready for putting up a brick passenger station 74 ft. x 104 ft. to cost $30,000. Platforms, with umbrella sheds, will be 460 ft. long.

Vancouver, B. C.—The Canadian Pacific announces that extensive additions to its wharf facilities is to be made. Bids are wanted for dredging and the building of stone walls. The proposed wharf is to be 670 ft. long x 162 ft. wide.

West Chester, Pa.—Contract reported let by the Pennsylvania to Corcoran Brothers, for grading and improving its yards at this place. New tracks are to be added and the terminal facilities increased.

Winnipeg, Man.—A sub-committee has recommended to the Board of Works that the City Engineer be instructed to prepare plans for a subway for both the Canadian Northern and Grand

Trunk Pacific Railways at the Main street crossing, near the Norwood bridge. It is also recommended that in the agreement with the Grand Trunk Pacific provision be made for two overhead steel bridges over the tracks between Cambridge and Pembina streets, and for a subway at Cambridge street.

RAILROAD CONSTRUCTION.

New Incorporations, Surveys, Etc.

ADIRONDACK & ST. LAWRENCE.—This road is in operation from De Kalb Junction, N. Y., south to Hermon, four miles.

ASHLAND, ODANAH & MARENGO.—This road has been opened for business from Odanah, Wis., to Echlin, 26 miles.

BRANDON, SASKATCHEWAN & HUDSON'S BAY.—See Great Northern.

BRINSON RAILWAY.—This road has been opened for business from Savannah, Ga., north to Springfield, 25 miles.

BUTTE, ANACONDA & PACIFIC.—Freight trains are now running on this road from Anaconda, Mont., to Browns, six miles.

CHERRYVALE, OKLAHOMA & TEXAS.—This company, which was incorporated to build about 700 miles of line from Cherryvale, Kan., to El Paso, Tex., has had its charter amended to provide for building branch lines as follows: Caney, Kan., southeast to Fayetteville, Ark., 150 miles; Pawhuska, Okla., southeast to South McAlester, Ind. T., 200 miles, and Childress, Tex., southeast via Abilene to Aransas Pass, 600 miles. The offices of the company are at Caney and Independence, Kan., and at Perry, Okla. The capital stock of the company is $18,000,000. S. M. Porter, of Caney; A. W. Shiltise, F. D. Brewster and J. H. Brewster, of Independence; R. E. Wade and J. H. Masters, of Perry, incorporators. W. R. Stubbs, of Kansas City, is also interested in the project. (March 15, p. 381.)

CARO NORTHERN.—This road has been opened for business for 16½ miles between Caro, Tex., and Mount Enterprise.

CHESAPEAKE & OHIO.—The Guyandotte Valley district has been extended from Logan, W. Va., to Ethel, five miles.

CHICAGO & ILLINOIS MIDLAND.—This road has been extended from Pawnee, Ill., east to Taylorville, 16 miles.

CHICAGO & NORTH-WESTERN.—The extension from Bonesteel, S. Dak., west towards the Rosebud Indian Reservation, finished to Herrick last year, has been extended from Herrick west to Gregory, 14.9 miles.

The Pierre, Rapid City & North-Western, building from Pierre, S. Dak., west to Rapid City, 165 miles, is reported finished.

CHICAGO, MILWAUKEE & ST. PAUL.—The White River Valley, Railroad from Chamberlain, S. Dak., west to Rapid City, 219 miles, is reported finished.

EL PASO & SOUTHWESTERN.—On the Western division a new branch called the Warren line has been opened for business from Lowell, Ariz., via Warren to Corta, 4.3 miles.

EUREKA HILL.—This company has given a contract to Baxter, Straw & Stove, of Provo, to build a five-mile line from Silver City, Utah. C. W. Nibley, President, Salt Lake City, and R. B. West, Chief Engineer, Silver City.

GRAND TRUNK PACIFIC.—According to reports from Montreal construction work on this line between Saskatoon, Sask., and Edmonton, Alb., is being pushed. About 1,700 men are now at work on this section. It is expected to have 150 miles graded by the first of next month so that rails can be laid.

GREAT NORTHERN.—The Brandon, Saskatchewan & Hudson's Bay on the Minot division has been opened for business from St. John, N. Dak., north to Brandon, Man., 73½ miles.

GULF, COLORADO & SANTA FE.—The Jasper & Eastern has been opened for freight and passenger traffic from De Ridder, La., to Cravens.

INDIAN TERRITORY ROADS (ELECTRIC).—J. C. Cameron, of New York City, has submitted a plan to residents of Ada, Ind. T., to build an electric line, including a branch, south for 13 miles.

KANSAS CITY, MEXICO & ORIENT.—Surveys are reported under way for extending this road from San Angelo, Tex., to San Antonio.

LARAMIE, HAHNS PEAK & PACIFIC.—This company, which has built a line from Laramie, Wyo., on the Union Pacific, west 30 miles to Centennial, will, according to local reports, shortly begin grading on a proposed extension from Centennial to Walden, Colo., about 70 miles. Financial arrangements have been made to finish the line to the coal fields in North Park.

MACON, AMERICUS & ALBANY (ELECTRIC).—According to local reports bids are asked for to build this proposed electric line from Macon, Ga., southwest to Albany, 150 miles. (April 19, p. 565.)

MALHEUR VALLEY.—See Oregon Short Line.

MICHIGAN ROADS.—Bids are wanted July 20 by J. E. Gingrass, Engineer of Construction of the Vans Harbor Land & Lumber Company, of Gladstone, Mich., for grading and laying tracks on 13 miles of road for a steam railroad from Cook's Mill, Mich., to Vans Harbor, Delta county.

MISSISSIPPI CENTRAL.—O. A. Gibson, of Natchez, who has a grading contract for some of the work on the extension of this road from Brookhaven, Miss., west to Natchez, has been given an additional contract to lay tracks on a 22-mile section of this extension. (May 17, p. 695.)

NEVADA ROADS.—A line from Las Vegas, Nev., south via Eldorado canyon to Searchlight, 60 miles, it is said, will be built by George P. Spittall, of Searchlight.

NEW YORK CITY ROADS.—Bridge Commissioner Stevenson reports to the Public Service Commission that the Williamsburg bridge will within the present year be fitted for the operation of elevated railroad electric trains over the structure.

NORFOLK & SOUTHERN.—The Pamlico division has been extended from Washington, N. C., south to New Bern, 35 miles.

The Eastern district of the Raleigh division has been opened for business from Washington, N. C., west to Farmville, 30 miles.

NORTH YAKIMA & VALLEY.—This road has been opened for business from North Yakima, Wash., west to Naches, 14 miles.

OREGON & WASHINGTON.—See Oregon Railroad & Navigation Co.

OREGON RAILROAD & NAVIGATION CO.—Plans have been finally completed for building the Oregon & Washington northward to Seattle and Tacoma. At Seattle there is to be a tunnel a mile long to enable the line to reach the business center of the city without causing congestion of traffic on the water front streets. At Tacoma also there will have to be a tunnel, to avoid steep grades. This tunnel will be 8,700 ft. long. At the Tacoma terminus the company has bought seven blocks of land, two of which will be the site for the passenger station.

OREGON ROADS.—A company is being formed in Oregon, with Steven Carter, of Eugene, as the principal promoter, to build a line from that place west to the Pacific coast at the mouth of the Siuslaw river, about 60 miles. It is proposed to begin work at once on the first 30 miles.

OREGON SHORT LINE.—The Malheur Valley has been opened for business from Ontario, Ore., west to Vale, 15 miles.

On the St. Anthony branch the Yellowstone Park Railroad has been extended from Marysville, Idaho, north to Mesa, 14.4 miles, thence north 6.8 miles.

PIERRE, RAPID CITY & NORTH-WESTERN.—See Chicago & North-Western.

PUBLIC BELT RAILROAD.—Additional contracts for building this line around New Orleans, La., to consist of a double-track main line, with a single-track line along the river front, a total of about 20 miles, are to be let shortly. Work is under way by Thomas Egan, of New Orleans, who has a contract for some of the work. Mayor Martin Behrman is President, and Hampton Reynolds, Engineer.

RIO GRANDE, SIERRA MADRE & PACIFIC.—The Temosachic-Bacerac branch of the Sierra Madre & Pacific has been opened for business from Temosachic, Mex., via Rincon to Madre, 32 miles. (March 15, p. 396.)

SHREVEPORT, HOUSTON & GULF.—This road has been opened for business from Prestridge, Tex., to Manning, nine miles. (March 15, p. 391.)

SIERRA MADRE & PACIFIC.—See Rio Grande, Sierra Madre & Pacific.

SPOKANE & INLAND EMPIRE (ELECTRIC).—This company has extended its line from Oakesdale, Wash., south to Palouse, 22.7 miles.

TACOMA EASTERN.—This company has extended its main line from Tilton, Wash., to Glenavon, three miles.

TAMPA NORTHERN.—This road has been opened for business from Tampa, Fla., north to Brooksville, 48½ miles.

TAYLOR, SOMERVILLE & GULF.—Incorporated in Texas with $100,000 capital and office at Taylor. The company proposes to build a line from Taylor, Tex., east to Somerville, about 60 miles. The incorporators include: J. A. Thompson, R. C. Briggs, Howard Bland, A. A. Wheatley, J. R. Lyon, Charles Parke and J. A. Jones.

TECOLOTE VALLEY.—An officer writes that this company has finished surveys, and will let bids about September 1 for its proposed narrow gage line from Las Vegas, N. Mex., north via Mineral Hill mining district, passing within five miles of Mora, the county seat of Mora county, to Black Lakes, thence west to Taos, about 80 miles. All of this, with the exception of 22 miles, will be in the

mountain, and will necessitate the piercing of a number of tunnels. At Las Vegas the company's shops will be built, and a line is projected from that point south to the Tecolote mining district. Frank J. Buck, Chief Engineer, Elizabethtown. The offices of the company are at Las Vegas.

Texas Interurban.—Incorporated in Texas with $400,000 capital to build a system of interurban lines from Austin, Tex. The incorporators include: T. Moore, of Elizabeth, N. J.; E. Miller, of White Plains, N. Y., and W. W. McKay, of Hempstead, L. I.

Texas Roads.—Residents of Waco, Tex., are interested in a project to build a line from Waco, west via Hamilton to Brownwood, about 120 miles.

Toledo, St. Louis & Western.—Vice-President George H. Ross is reported as saying that the work of relaying 75-lb. rails between Toledo and St. Louis, which has been under way for about 2½ years, will be finished this month. About 120,000 yards of ballast at various points on the line is being added and orders have been given for six steel bridges to be built this year. Contracts have also been let for extensive ditching and widening of banks.

Virginia-Carolina Railway.—This line has been extended from Taylor's Valley, Va., eight miles, to Konnarock.

Virginian Railway.—Press reports state that this company, the successor of the Tidewater and the Deepwater Railways, which is building a line from Norfolk, Va., west and north to a point in West Virginia, has plans made for building a branch from a point on the main line in Virginia north to Richmond. The old roadbed of a line which was projected from Manchester to the mines at Midlothian, about 13 miles, is to be widened and extended into Powhattan to connect with the Tidewater & Western, which it is said has been bought by the Virginian Railway. The Tidewater & Western, formerly the Farmville & Powhattan, is a narrow gage line operating about 89 miles of road in Virginia. From Manchester entrance is to be made over the James river above Belle Isle, at the west end of the city.

Waco, Hamilton & Brownwood.—Incorporated in Texas with $120,000 capital and office at Austin. The company proposes to build a line from Waco, Tex., west through McLennan, Bosque, Hamilton, Comanche, Mills and Brown counties to Brownwood, 120 miles. J. B. Baker, J. S. McLendon, H. S. Shear and S. Sanger, of Waco; J. A. Austin, B. S. Smith and O. F. Johnson, of Brownwood, and J. L. Spurlin and J. T. James, of Hamilton, are incorporators.

Western Pacific.—Track is reported laid from Salt Lake City, Utah, west to a point 21 miles beyond the Utah-Nevada state line, 143 miles. Track-laying is being pushed from that point west, and will also be started this month at Winnemucca, Nev., and at Marysville and Stockton, Cal.

White River Valley.—See Chicago, Milwaukee & St. Paul.

Wichita Falls & Northwestern.—This road has been extended from Burkburnett, Tex., north to Kell, Okla., 14 miles.

Yellowstone Park Railroad.—See Oregon Short Line.

Yosemite Valley.—This road has been extended from Bagby, Cal., east to the Yosemite National Park at El Portal, 30 miles.

RAILROAD CORPORATION NEWS.

Atchison, Topeka & Santa Fe.—It was announced last week that the subscriptions to the $26,000,000 10-year 5 per cent. convertible bonds offered to shareholders at par would, it was estimated, amount to about $10,000,000. The issue was not underwritten.

Bald Eagle Valley.—The Pennsylvania is to exchange three shares of its capital stock and $50 in cash for each share of the outstanding 33,463 shares of the Bald Eagle Valley. The Bald Eagle Valley runs from Vail Station, Pa., to Lockhaven, 51 miles, with 43 miles of branches. It is leased to the Pennsylvania, which owns nearly half of the stock. The annual dividend rate has been 10 per cent., and in May, 1906, an extra dividend of 9 per cent. in stock was paid.

Bangor & Aroostook.—Brown Bros. & Co., New York, are offering at a price to yield about 5½ per cent. $900,000 5 per cent. series D car trust notes, dated April 1, maturing in 20 semi-annual instalments beginning October 1, 1907. The notes are secured on 300 flat cars, 706 box cars, 40 stock cars and 6 cabooses.

Buffalo Terminal Association.—See Wabash.

Chicago Railways Company.—A hearing on the following plan will be held on July 29 and the discharge of the receivers of the Chicago Union Traction and of its subsidiaries and the turning over of their property to the Chicago Railways Company will then be asked. The new company will make an issue of first mortgage 25-year 5 per cent. bonds to provide funds for rehabilitation, additions, etc. The amount of these bonds is not limited; the only restrictions are those as to the purposes for which they can be issued under the mortgage. There will also be $32,800,000 consolidated mortgage 20-year 4 per cent bonds, of which series A, $15,000,000, will be prior to series B, $17,800,000; also, $5,000,000 20-year 4 per cent. sinking fund income debentures, $4,500,000 5-year 6 per cent. collateral notes and $5,000,000 10-year 5 per cent. collateral notes. Income participation certificates of three classes aggregating $23,250,000 will also be issued. Immediate cash requirements are to be supplied by two syndicates; the first to furnish $12,000,000 for rehabilitation and the second $4,000,000 to cover the receivers' certificates, car trust and other notes, and organization expenses.

Chicago Union Traction.—See Chicago Railways Company.

Delaware & Hudson.—See Troy & New England.

Fort Dodge, Des Moines & Southern (Electric).—The common stock of this company has been increased from $1,500,000 to $5,500,000 and the preferred stock from $1,000,000 to $1,200,000. There have been authorized $6,500,000 refunding mortgage bonds, of which $3,500,000 is reserved to retire an equal amount of authorized first mortgage 4½ per cent. bonds of 1931. The company expects to open by September 1 a line from Des Moines, Iowa, to Fort Dodge, about 80 miles. It will be operated by electricity for passenger service and by steam for freight. A part of the road consists of trackage rights over the Newton & Northwestern line, from Kelly to Lanyon, 37 miles, which has been electrified. A branch is being built from Kelly to Ames and a four-mile branch from Colfax to Doddard is in operation, being leased to the Newton & Northwestern. The Newton & Northwestern runs from Newton, Iowa, to Rockwell City, 102 miles, and has been acquired by the F. D., D. M. & S.

Lake Shore & Michigan Southern.—See Mahoning Coal Railroad.

Mahoning Coal Railroad.—A dividend of 6 per cent. on the $1,500,000 common stock will be paid August 1, to stockholders of record July 18. This is the same rate as was paid February 1. The company is leased to the Lake Shore & Michigan Southern, which holds $865,900 of the common stock. In 1906 the company paid 10 per cent.

Minneapolis, St. Paul & Sault Ste. Marie.—The directors have authorized an increase of the common stock from $14,000,000 to $28,000,000 and of the 7 per cent. non-cumulative preferred stock from $7,000,000 to $14,000,000. Only about $4,000,000 of the new stock will be issued now.

Mobile, Jackson & Kansas City.—Control of this company, it is understood, has passed to L. S. Berg, the new President, and associates, the Yoakum interests having decided not to use the option which they held on the property.

Newton & Northwestern.—See Fort Dodge, Des Moines & Southern.

Norfolk & Ocean View (Electric).—This company, the successor of the Bay Shore Terminal, which was sold under foreclosure a year ago, has made a mortgage to the Baltimore Trust Company securing an issue of $1,500,000 5 per cent. bonds; of this amount $1,000,000 is to be issued at once to pay for the Bay Shore Terminal and for improvements, while the remainder is to be issued as needed for further improvements, extensions or rolling stock.

Pennsylvania.—See Bald Eagle Valley.

St. Louis, Brownsville & Mexico.—Whitaker & Co., St. Louis, are offering, at a price to yield 6.10 per cent., a block of the $1,600,000 5 per cent. notes due November 1, 1910, being part of an authorized issue of $3,000,000. The proceeds will be used for additional equipment, spur tracks and other facilities.

Troy & New England (Electric).—Control of this company, which runs from Troy, N. Y., to Averill Park, nine miles, has been acquired by the Delaware & Hudson.

Union Pacific.—It is understood that about $4,000,000 of the $75,000,000 20-year 4 per cent. convertible bonds were subscribed to. The issue was underwritten.

Wabash.—This company has arranged to extend for one year, at 5 per cent., $350,000 of the $835,000 6 per cent. Buffalo Terminal Association first mortgage bonds, which fell due on June 29. These bonds are secured on the Hamburg Canal strip, which the Wabash bought from the city of Buffalo for terminal purposes. They are guaranteed principal and interest by the Wabash.

White Pass & Yukon.—A semi-annual dividend of 4 per cent. on the £1,375,000 ($6,875,000) stock was paid on July 15. Previous dividends have been as follows: 2½ per cent. in 1903, 5 per cent. in 1904, 3½ per cent. in 1905, 5 per cent. in 1906 and 3 per cent. last January.